Taiwan Public Health Report 2005

Department of Health, R.O.C.(Taiwan)

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Foreword

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Minister of Health

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A healthy population is the foundation of national power. For the reason that health is invaluable and life is precious, the Department of Health thus promoted with vigor in 2004 the core value of "treasuring your life", hoping that the citizens, throughout every stage of their life, are loved dearly and cared about, and at the same time, enjoy a healthy life. A true health is the balanced status of physical, mental and social well-beings. Therefore, to pursue health of all directions has become an important goal of the people in their process of pursuing a satisfactory and harmonious life. At this stage, the Executive Yuan has made "Healthy Taiwan" the main axle of administration, focusing on six dimensions of physical and mental health of the population, everlasting health of the environment, healthy constitution of the government, healthy economic systems, healthy mutual trust of the society, and healthy quality of life, as directions for citizens of all walks to strive for. Of which, the "physical and mental health of the population" has always been the goal of the Department to devote to. We have, therefore, formulated strategies, goals and implementation plans with a view to encourage the public to stride toward a physically and mentally healthy life for all.

This volume of Annual Report 2005 records and illustrates achievements in health and medical care services in the year 2004. The data are collected from the implementation strategies and measures in the period between January and December 2004. Some major achievements are described as follows:

1. Building a Healthy Life and Improving the Power of Self-Management

Focuses were placed on the promotion of community-based healthy life, realization of an all-directional tobacco hazards control, implementing an integrated preventive healthcare service, promoting national cancer control programs, promoting pro-repro-

duction health education programs, and strengthening knowledge of people in all ages on the prevention and control of accidents and injuries. We hope that through the implementation of these programs, the goals of improving the concepts of disease prevention on the part of the public, the building of a healthy life, and the construction of a healthy lifestyle can be attained.

2. Strengthening Disease Control System on the Experience of SARS Control

Action has been taken to establish the second-stage Communicable Disease Control Medical Care Network, realize the auditing and inspection of nosocomial infection control, conduct sand-table drills on the allocation of materials, and finalize the Preparatory Plan in Facing Major Influenza Outbreaks. In addition, programs have also been implemented to prevent and control AIDS, to strengthen prevention and control of communicable diseases such as dengue fever, enterovirus infections and tuberculosis, to promote the "four-year plan for the prevention and control of bacillary dysentery in mountain areas", to provide young children with free chickenpox immunization, to enhance the prevention and control of hepatitis B and C, and to continue to conduct plans for the eradication of poliomyelitis, congenital rubella syndrome and neonatal tetanus, and the elimination of measles.

3. Reforming the Health Care Systems to Upgrade the Quality of Care

Work has been done to continue to promote the medical care network plan, to construct a community-centered medical and disease control system, to promote an indigenous family medicine system, to enhance medical care operations to safeguard the safety of patients, to improve the effects of hospital accreditation, to implement a "regular but unscheduled" follow-up visit system of accreditation, to enhance emergency care and rescue systems, to strengthen psychiatric care services, to improve long-term care and rehabilitation for the physically disabled, to strengthen medical care in mountain areas and offshore islands and for the indigenous peoples, and to improve the operation and management of hospitals affiliated to the Department.

4. Strengthening the Management of Pharmaceuticals and Foods to Protect the Safety of the People

A joint inspection across district and a system calling for the monitoring of illegal advertisements by all people have been implemented; a safety management system for drug use has been constructed; a plan to avoid and prevent errors in drug use has been conducted; and a databank on the labeling of drug bags has been set up. The GMP system for pharmaceuticals continues to be practiced; a five-year plan for the establishment of a safe environment for the use of Chinese herbal medicines has been conducted; and a comprehensive and effective prevention and control system for drug abuse has been established. Work has also been done to promote development of biotechnology industries, to establish a single-window for counseling on biotechnologies, and the execution of the drug hazards compensation system.

5. Promoting the Everlasting Development of the National Health Insurance

A pilot project on the holistic care of patients by the family medicine system has been tried out. Action has also been taken to implement universally the use of the IC card, to expand items for preventive healthcare services, to protect the rights to medical care of the disadvantaged groups, to strengthen medical care for acute and critically ill patients, to contain wastes in medical costs, and to balance the financing of the National Health Insurance. Although the National Health Insurance is currently running into bottlenecks of management, we hope that, by strengthening its existing care systems, we can continue to renovate its payment systems to meet the goals of "fair sharing, simplified and convenient administration, balanced financing, and everlasting management".

Health is the basic rights of the public; and to safeguard the health of the citizens is the sacred duty of the Department. We hope that colleagues of the Department, on the two main values of "abiding by laws and be practical, cherish life and love the people", to shoulder the four important missions of being a "promoter of health for all, educator on healthy life, supporter of health industries, and participant of international health affairs", to strive toward the realization of a healthy Taiwan, and to promise to the general public a safe and healthy life.

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I. Introduction

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1. The Population

1. The Population and Growth Rates

In 2004, there were in the Taiwan Area (including Kinmen and Matsu) a total of 226 million population registered. Of them, 115 million were males, and 110.6 million were females. The growth rate of the population was 3.7‰. The age structure of the population is shown in Figure 1-1.

2. Birth, Death and Natural Increase Rates

The crude birth rate in 2004 was 9.56‰, lower than 10‰ for the first time and the lowest of all

Figure 1-1 Age Structure of Population, Taiwan Area, 2004

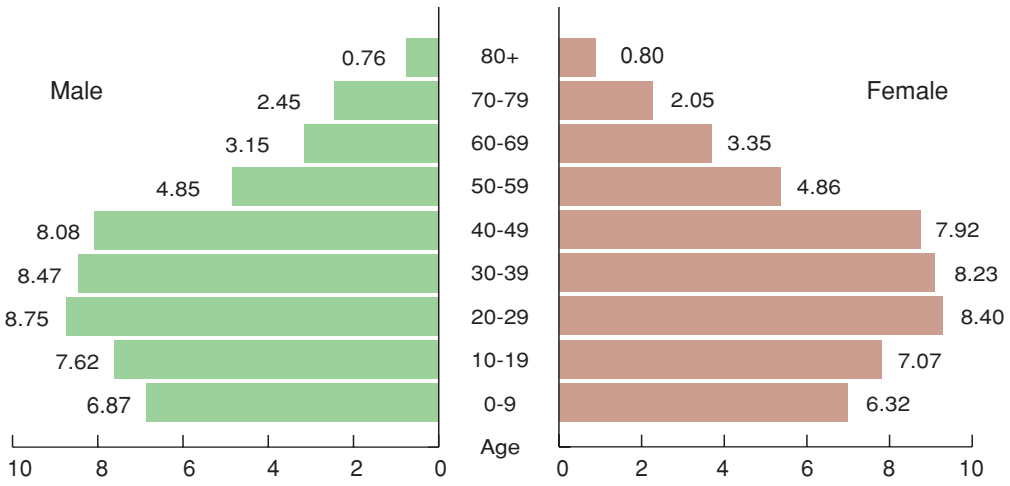
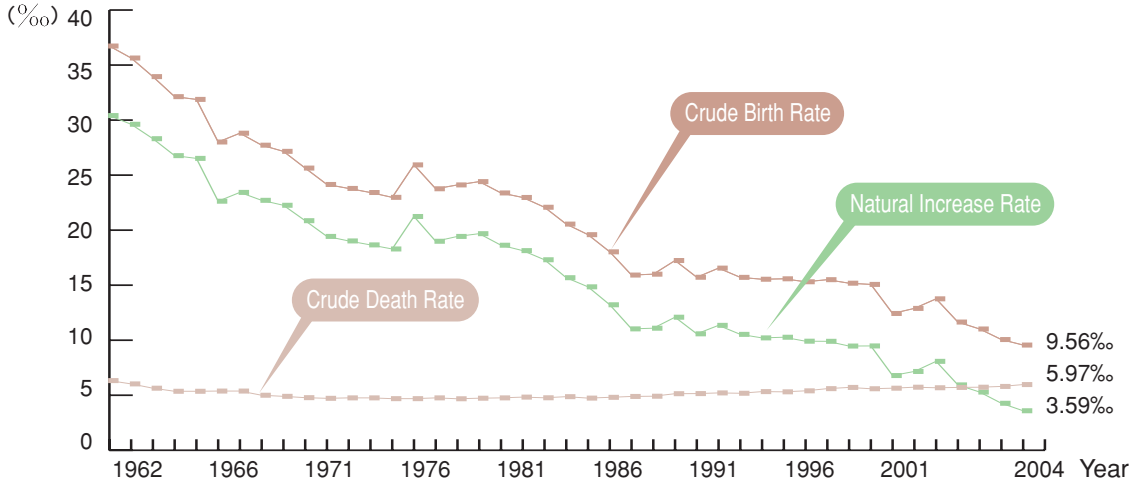


Figure 1-2 Crude Birth Rate, Crude Death Rate, and Natural Increase Rate of Population



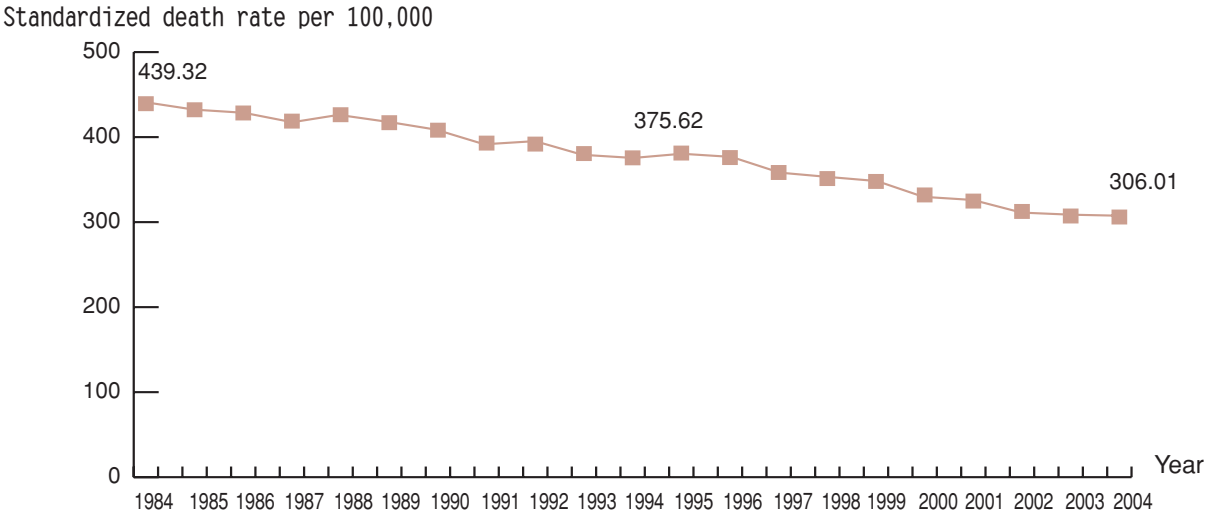
years. The crude death rate was 5.97‰, and was one of the lowest countries in the world. The sharp decline of birth rate had also brought about decline in the natural increase rate of population to 3.59‰ in 2004; again the lowest of all years (see Figure 1-2).

Taking the population structure of 1981 as a basis for adjustment, the standardized death rate in 2004 was 306.01 per 100,000 population; a decline by about 30% as compared to that of 1984. The average life expectancy has, therefore, increased year by year.(see Figure 1-3).

3. Age Composition

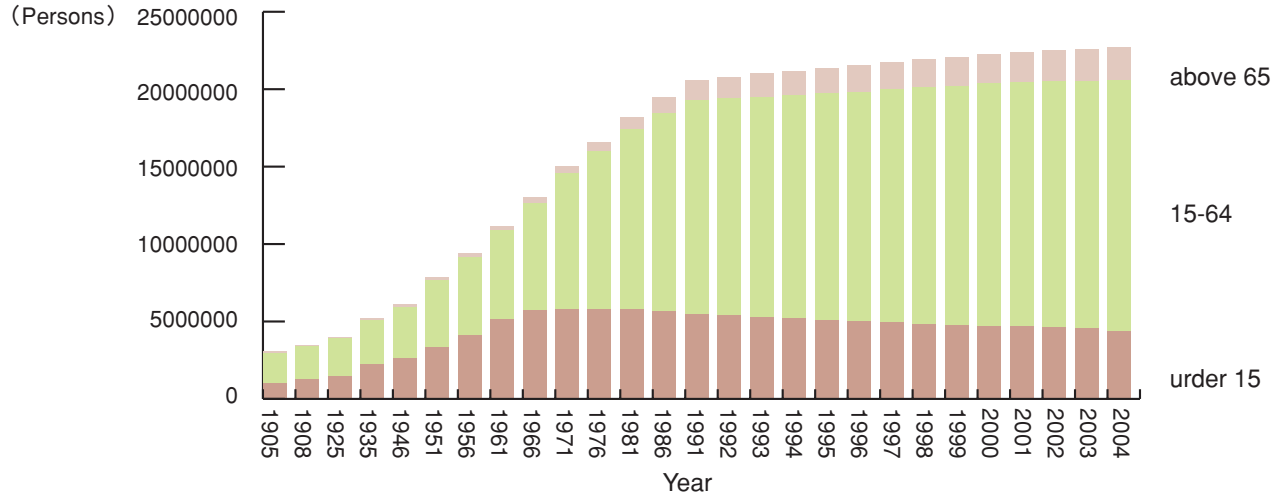
In 2004 in the Taiwan Area, the population under 15 years of age accounted for 19.34% of the total; the productive age population of 15-64 years accounted for 71.19%, and the elderly population above the age of 65 years accounted for 9.48%. Therefore, every 100 productive age population had to support 40 dependent population (under 15 and above 65 years). The age structures of population in the Taiwan Area by year are shown in Figure 1-4.

Figure 1-3 Standardized Death Rate by Year, Taiwan Area



* Including Kinmen and Matsu since 1994. ** Adjusted by the population of 1981.

Figure 1-4 Age Structure of Population by Year, Taiwan Area



2. Life Expectancy

For the advancement in medical sciences, improvement in nutrition and living environment, and enhancement of health and medical care, the average life expectancy of the population has increased year by year. In 2004, the life expectancies for males and females were 73.47 and 79.70 years, respectively, increasing by 15.76 and 19.44 years respectively as compared to those of 1952 (see Figure 1-5).

3. Ten Leading Causes of Death

In 2004, 133,679 persons had died, and the mortality rate of all causes was 590.28 per 100,000 population, a sharp decline as compared to the 950.80 of 1952. The leading causes of death had

Figure 1-5 Life Expectancy

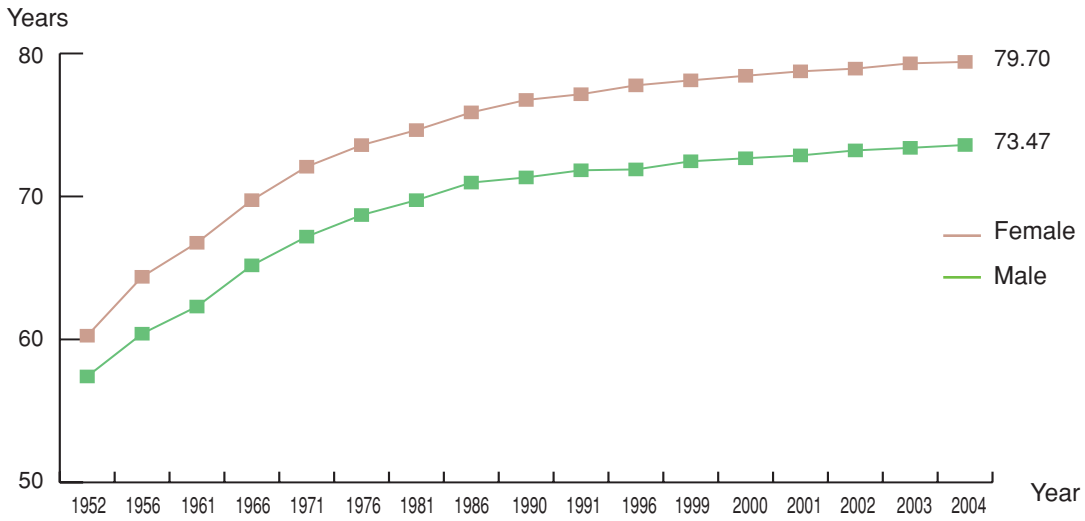
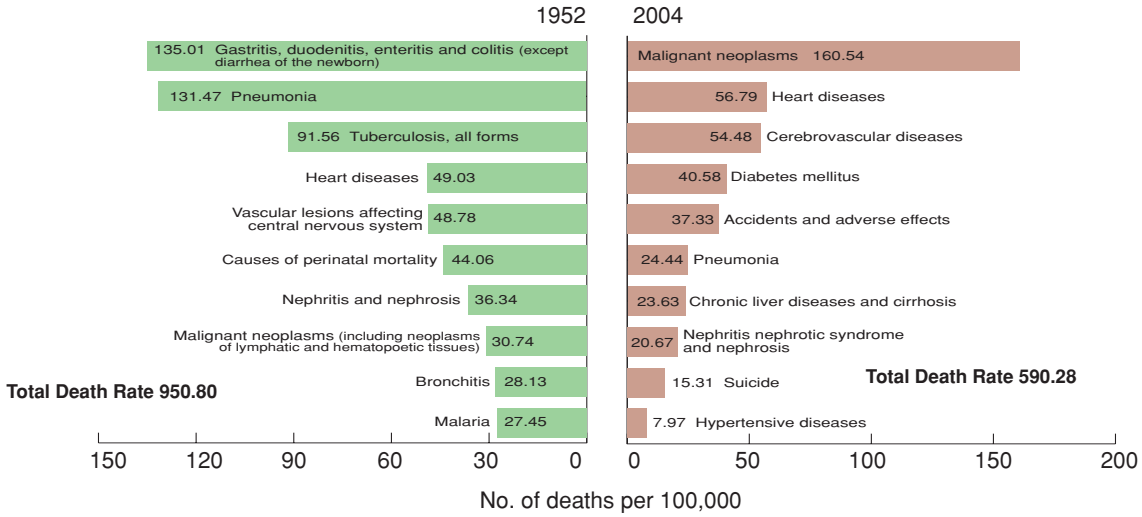


Figure 1-6 Changes in Ten Leading Causes of Death



shifted from acute communicable diseases to chronic diseases, accidents and adverse effects. For the ten leading causes of death and their mortality rates, see Figure 1-6.

4. Neonatal, Infant and Maternal Mortality Rates

With the advancement in medical sciences, the neonatal mortality rate had dropped sharply from 18.79 per 1,000 live births in 1952 to 2.88 in 2004; the infant mortality rate had dropped from 41.55 per 1,000 live births to 5.30, and the maternal mortality rate had also dropped from 197 per 100,000 live births to only 6 in the same period (see Figure 1-7).

5. Medical Expenditures

1. National Health Expenditures Show Steady Growth

Since 1980, the average per person medical expenditures had increased steadily year by year.

Figure 1-7 Neonatal , Infant , and Maternal Mortality Rates

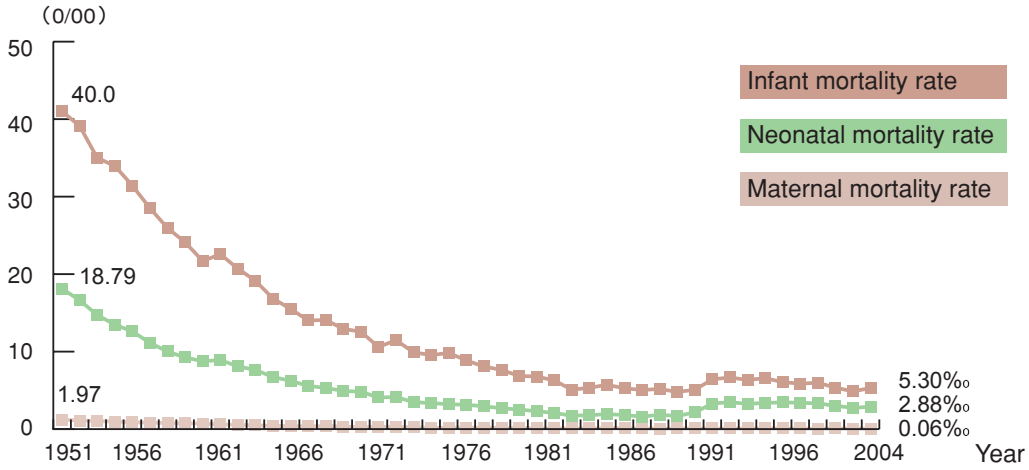


Figure 1-8 Average Per Person Per Year NHE and NHE/GDP Ratios by Year

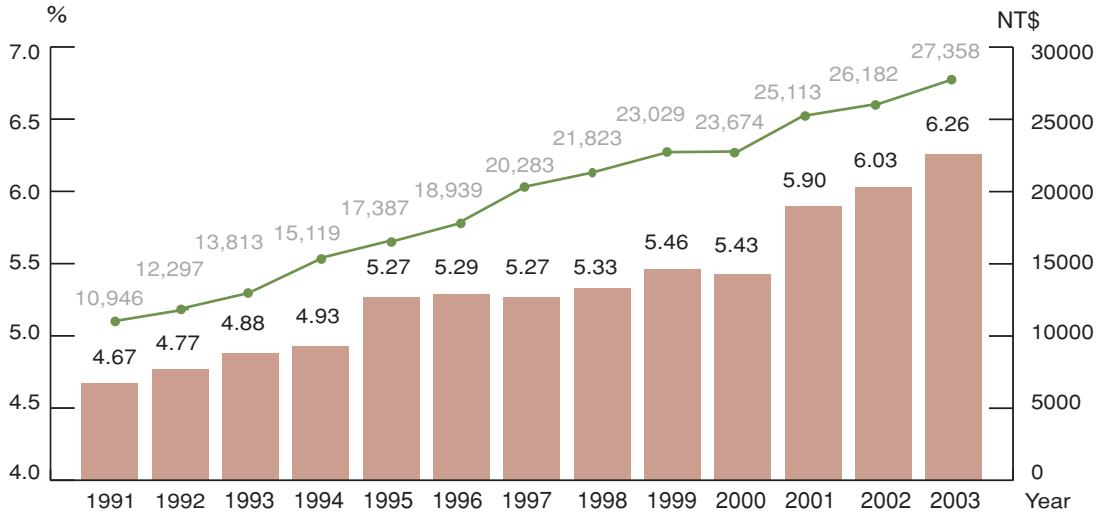


Table 1-1 National Health Expenditures, 1980-2004

Year	Total NHE (NT$ million)	Distribution by sector(%)			Average per person NHE(NT$)	NHE/GDP (%)	% of insured to total population
		Government	Insurance	Private			
1980	50,704	17.89	12.65	69.46	2,874	3.40	16.64
1981	70,335	17.56	13.46	68.98	3,914	3.96	17.83
1982	80,058	18.77	14.44	66.79	4,376	4.21	19.46
1983	83,875	18.16	15.82	66.02	4,511	3.99	21.22
1984	96,157	16.47	17.99	65.54	5,095	4.10	22.95
1985	108,136	17.70	21.29	61.01	5,651	4.37	25.40
1986	122,590	18.29	23.08	58.63	6,333	4.29	28.72
1987	138,741	19.22	24.88	55.90	7,092	4.29	32.22
1988	153,875	20.96	23.99	55.06	7,776	4.37	37.53
1989	166,855	18.08	28.49	53.43	8,340	4.24	44.47
1990	180,959	16.07	34.69	49.24	8,945	4.20	47.22
1991	222,016	17.62	35.70	46.69	10,828	4.62	49.36
1992	259,791	16.90	37.89	45.21	12,548	4.87	54.09
1993	293,668	16.39	37.97	45.64	14,052	4.96	56.00
1994	326,188	15.26	39.73	45.02	15,469	5.05	57.48
1995	385,047	12.48	50.35	37.17	18,105	5.49	92.34
1996	428,557	10.65	52.45	36.90	19,987	5.39	95.95
1997	465,050	9.20	52.67	38.13	21,496	5.40	96.29
1998	506,291	7.93	53.95	37.72	23,186	5.48	96.08
1999	546,820	7.93	53.42	38.65	24,844	5.67	96.06
2000	569,236	7.74	52.84	39.42	25,659	5.67	96.16
2001	589,170	8.34	54.55	37.11	26,372	5.97	--
2002	612,103	7.22	55.39	37.39	27,249	6.00	--
2003	639,675	8.22	55.31	36.47	28,351	6.20	--
2004	664,698	7.69	56.55	35.75	29,351	6.17	--

Sources:

1. For 1980-1989, Lin HS, Statistics on NHE, Taiwan Economics Journal Proceedings, 1994, P.294, Table L1.
2. Since 1990, Health and Vital Statisfics, (I) : Statistics on NHE, Department of Health.
3. Percentage of the insured to the total population, Hsieh CJ and Yu HK (1998) Study on Reasons for the Growth of NHE in Taiwan, Science and Humanity, 10(1), 1-32; and BNHI (2002), statistics on NHI, Taipei, BNHI.
4. The armed forces were included in the NHI since February 2001; for national defense reasons, information is reserved.
5. Since the inception of the NHI in March 1995, statistics on the insurance sector comes from the BNHI.

Soon after the inception of the National Health Insurance in 1995, the national health expenditures as percentage of GDP had exceeded 5%, primarily due to the sudden increase of the population insured. The distribution of national health expenditures by sector shows that in the early 1980s, expenditures by the private sectors accounted for more than 70% of the total; they were borne primarily by the people themselves out of their own pocket. With the expansion of social insurance systems, by early 1990s, expenditures by the private sectors had declined to about 50%; and since the implementation of the National Health Insurance, the decline in the expenditures by the private sectors and the increase in the insurance sectors became very obvious. Recently, however, the ratio of the two sectors has stayed stable, and expenditures by the government sectors has declined to less than 10% (7.69% in 2004), as shown in Table 1-1.

2. NHE/GDP Ratio Exceeds 6%; 6.17% in 2004

In 2004, the national health expenditures (NHE) were around NT$ 664.7 billion, an increase of 3.91% over the previous year, and accounting for 6.17% of the GDP for the year 2004. On average, one person spent NT$ 29,351 for medical care each year. In 2001, when the GDP growth rate was negative, the ratio of NHE to the GDP of that year was larger than ever, suggesting that at time of economic depression, needs for medical care were still intense, and the NHE/GDP ratio for the year 2002 thus exceeded 6%, as shown in Figure 1-8.

II. Health Organization at National Level

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Organization of health administration in Taiwan comes at two levels, the national and the local (national municipalities, and counties and cities). At the national level, the Department of Health (DOH) of the Executive Yuan is the highest health authority responsible for the formulation of national health policies, the execution of administrative affairs, and guidance, supervision and coordination of local health organizations.

At the local level, there are health departments in the two national municipalities, Taipei and Kaohsiung, and health bureaus in the 23 counties and cities. Their major responsibilities are to promote various health programs in their respective areas in coordination with the national health policies.

Each county/city health bureau maintains a health station at every rural and urban township to take charge of primary health care. In some remote areas, health rooms are set up to provide the residents with basic health and medical care services. At present, there are 25 health bureaus, 369 health stations and 497 health rooms throughout the country.

1. Health Organization at the National Level

In the Department of Health, there are six technical bureaus, Bureaus of Medical Affairs, Pharmaceutical Affairs, Food Safety, Nursing and Health Care, International Cooperation, and Planning, and the NHI (National Health Insurance) Task Force, Information Management Center, Science and Technology Unit, Health Education Promotion Committee, and Hospital Management Committee. The subordinate organizations include the Bureau of National Health Insurance, Center for Disease Control, Bureau of Health Promotion, Bureau of Food and Drug Analysis, Bureau of Controlled Drugs, Committee on Chinese Medicine and Pharmacy, NHI Supervisory Committee, NHI Dispute Mediation Committee, and the NHI Medical Expenditure Negotiation Committee. There are also the Corporate National Health Research Institutes, Corporate Center for Drug Inspection and Examination, Taiwan Joint Commission on Hospital Accreditation, Corporate Foundation for Compensation for Drug Hazards, Corporate Organ Donation Registration Center, and 34 hospitals, as shown in Figure 2-1.

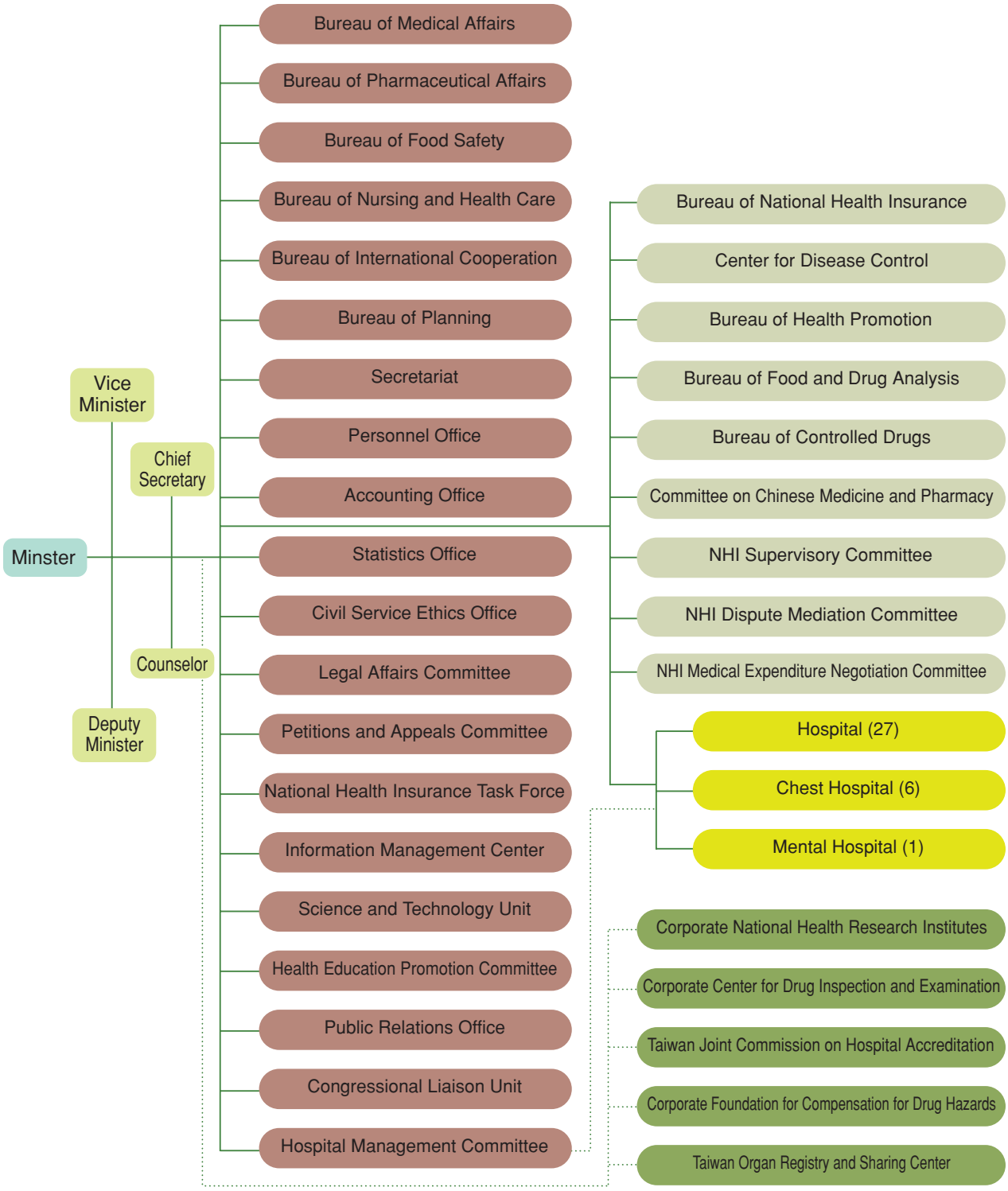
2. Restructuring of Organization

In July 1999, the Executive Yuan completed the major operation of downsizing the Taiwan Province to reduce Taiwan's administrative level to three, the national, municipality and county/city, and townships. In March 2001, President Chen, President of the Republic, convened in person a Government Restructuring Committee to accelerate the restructuring of government. In October 2002, the Department and the Ministry of the Interior jointly made a preliminary planning for a Ministry of Health and Social Security. In coordination with the regulations of the Organization Standards Act of Central Administrative Organizations promulgated in June 2004, the plan was further amended, and the amended draft was submitted to the Executive Yuan for review and approval in March 2005.

Restructuring of the internal organization of the Department completed in 2004 is summarized as follows.

1. The Bureau of Medical Administration was made the Bureau of Medical Affairs to be responsible for the management of various kinds of medical personnel, medical institutions and organizations, promotion of medical technologies and management of medical quality, mental health and prevention of psychiatric diseases.
2. Using the Central Region Office, a Bureau of Nursing and Health Care was newly established

Figure2-1 Organization of the Department of Health,the Executive Yuan



for the promotion of special medical care services such as, medical care in mountain and offshore islands, and long-term care.

3. A Bureau of International Cooperation and overseas posts were created to strengthen participation in international health affairs, to promote substantive health diplomacy, and to develop matters concerning international cooperation in health and medical care.
4. Under the Center for Disease Control, a research and laboratory testing center and an information office were set up to enhance the research and laboratory testing capabilities on various communicable diseases; and a nationwide epidemic information network was set up to quickly gather disease information for reference in policy-making. Employment restrictions were made more flexible to allow recruitment of high-technology personnel and professionals in medicine and preventive medicine for service in disease control.

3. Pluralistic Management of Public Hospitals

1. Organization of DOH Hospitals

Under the Department, there are 20 general hospitals, seven branch hospitals, five psychiatric sanatoriums, one leprosarium and one chest hospital. They are managed and supervised by the Committee on Hospital Management of the Department.

2. Organization Development

1) Regional Alliance

To improve the management efficiency of hospitals, and to upgrade service quality, all DOH hospitals have been organized into regional alliances. To meet the needs of their management, four regional management committees, the Taipei Region (the Taipei Hospital), the Northern Region (the Taoyuan Hospital), the Central Region (the Taichung Hospital), and the Southern Region (the Chiayi Hospital). have been set up. Through resource sharing, technology exchange and joint marketing, service quality and efficiency of hospitals are improved, operation costs are reduced, and competitiveness is upgraded. The regional alliances will help in the consolidation of medical care resources, deployment of medical personnel, financial and property management, training of specialists, filing of claims for the NHI payments, and information and administrative management.

2) Pluralistic Management

To encourage participation by the private sectors and thus reduce the financial burdens of the government, the BOT (build, operation and transfer) mode was employed for the planned Shuanghe Hospital. On March 8, 2004, a contact was signed with the Taipei Medical University for the construction and operation of the hospital. The Department also entrusted, on November 1, 2001, the Taipei Veterans' General Hospital for the operation of the Ilan Hospital. The Yunlin Hospital was made on April 1, 2004, the Yunlin Branch Hospital of the National Taiwan University Hospital. The operation of the Penghu Hospital was entrusted on May 1, 2004, to the Tri-Service General Hospital. A plan is underway to reorganize the Kinmen and the Lienchian county hospitals into DOH hospitals. To overcome difficulties in recruiting medical doctors, there have been plans to share facilities with medical care institutions of the private sectors on a joint management or partial open basis. The Department is also studying the feasibility of establishing one public hospital in each county and city.

3) Upgrading the Quality of Medical Care Services

To make the organization more flexible for the enhancement of competitiveness, the DOH hospitals have been supervised to implement the Overall Improvement of Service Quality Plan of the Executive Yuan, to promote overall quality management activities to strengthen service-oriented, considerate and convenient service quality policies. Various activities have been initiated in this end. The DOH Taichung Hospital won the 6th National Quality Award of the Executive Yuan; Dr Chen,

Director of the DOH Fengyuan Hospital won the 15th National Quality Award for Individual; the DOH Keelung Hospital and the DOH Tsaotun Psychiatric Sanatorium won the 5th National Golden Axe Medal and the Silver Axe Medal, respectively; and the DOH Hsinchu Hospital and the DOH Tsaotun Psychiatric Sanatorium each won an Award of Excellence for Labor Safety and Health.

III. National Health Insurance

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The National Health Insurance is the maximum safeguarding umbrella for the maintenance of the welfare of the population. Since the inception of the National Health Insurance in Taiwan on March 1, 1995, by the end of 2004, the aim of the universal subscription had been attained; the convenience and equity in medical care for the public had made significant improvement; and the protection of the rights to medical care of patients of severe illnesses and injuries and those of the less privileged groups had also become more comprehensive. Generally speaking, the implementation of the National Health Insurance has brought about a high coverage rate, reduced insurance premiums, made medical payments more comprehensive, and enhanced easier access to medical care. The achievements of Taiwan's National Health Insurance has been the target of admiration of many countries; and in 2004 alone, 50 some countries had sent teams for observation. The leading journal in the global health science and service category, the Health Affair, in publishing research papers on Taiwan's National Health Insurance in 2003, commented that, by the WHO financial burden equity indexes, the ratio of medical expenditures to family disposable incomes in Taiwan's National Health Insurance, that is, the financial burden equity, ranked the first in the world, and was superior to that of many major advanced countries.

Along with the rapid aging of population, higher costs of high technologies, the growth of medical costs exceeding incomes from insurance premiums, the difficulties in the adjustment of insurance premium contribution rates, premium bases and payment schedules, and the threat of emerging communicable diseases, the finance of the National Health Insurance is facing crisis. To meet the challenges, the Executive Yuan established a task force for the planning of the second-generation National Health Insurance to plan for the reform of the system. A report was prepared by the task force in 2004. This Chapter will focus on insurance underwriting, insurance financing, medical payments, payment system, health insurance IC card, and prospects and challenges of the National Health Insurance for the year 2004

1. Insurance Underwriting

To reach the goal of universal coverage, measures have been taken to induce the uninsured into the program. Any nationals who have been registered in Taiwan for more than four months, or foreigners living in Taiwan and holding resident permit for more than four months, should join the National Health Insurance and are targets of the Insurance program. To reduce the burden of the insurance premiums on people in economic strains, the following measures have been taken.

1. Paying insurance premiums by installment; in 2004, 82,479 cases for NT$ 2.176 billion had been processed.
2. Establishing a relief fund for the National Health Insurance; in 2004, loans had been made to 38,238 cases for a total of NT$ 2.061 billion.
3. To protect the rights to medical care of the less privileged groups, there are medical protection measures. When one is unable to pay for insurance premium and yet is in urgent need for medical care and is in possession of proof of low-income issued by the neighborhood chief or the medical care institution, he/she may be medically cared as an insured. In 2004, 1,252 such cases had been processed for the sum of NT$ 175.3 million. A total of 619 cases at the cost of NT$ 5.51 million had been referred to public interests groups to pay for their insurance premiums or for other assistance.
4. To reduce the financial burdens of patients with severe illnesses and injuries such as cancer, chron-

ic psychiatric diseases, hemodialysis, congenital disorders and rare diseases, their co-payments for medical care are waived. There are 560,000 some such patients. Although they account for a mere 2.9% of the total insured, their share of the medical care resources in 2003 alone was NT$ 85.9 billion, and accounting for 24% of all medical costs.

5. The rights to medicines and medical care of patients of rare diseases, hemophilia and AIDS are assured.

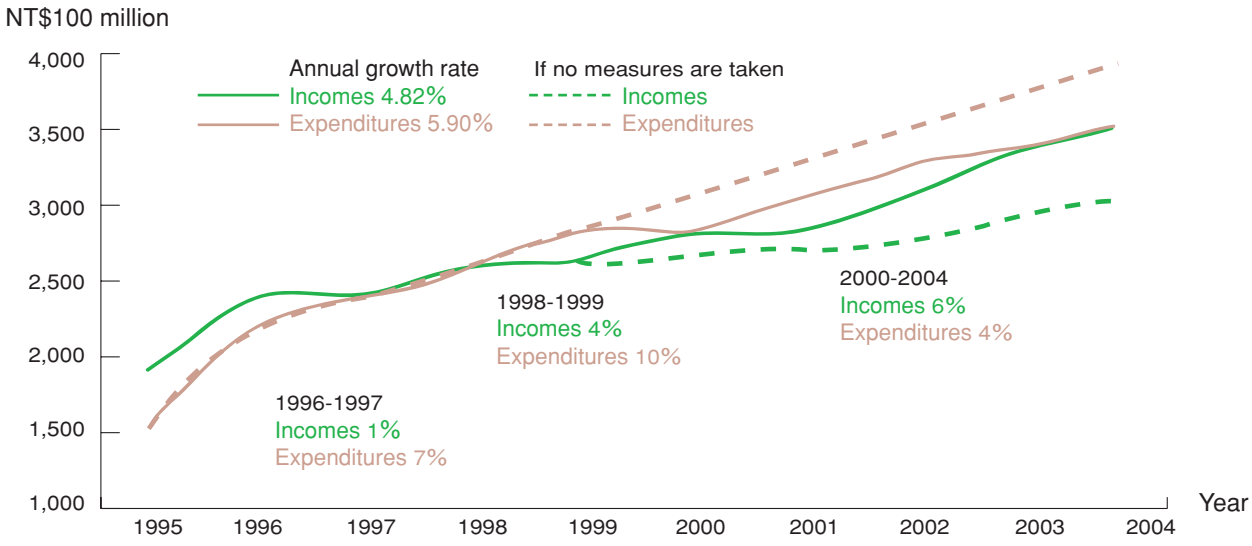
2. Insurance Financing

When the National Health Insurance was initiated in 1995, the premium rate was set at 4.25%. This was an average rate calculated actuarially on a five-year cycle basis. For factors such as the slowdown of economic development, aging of population, advancement in medical science and technology, and improvement of medical care quality, since 1998, incomes from insurance premiums have been behind the growth of medical costs to result in the imbalance of the Insurance finance. The various income-increment and expenditure-saving measures and the strict monitoring of financial affairs executed by the Bureau of National Health Insurance had prolonged the financial balance originally set for five years until 2002 when the premium rate was slightly adjusted from the original 4.25% to 4.55% to maintain the minimum financial balance for the next two years.

Between March 1995 and December 2004, the insurance income, calculated on the basis of right to collect and duty to pay, was NT$ 2,771.8 billion, whereas the cost was NT$ 2,764.4 billion; and the accumulated reserves funds were NT$ 7.4 billion, lower than the amount of one month spending (about NT$ 29.4 billion). By regulations of Article 67 of the National Health Insurance Act, the premium rate shall be adjusted when the total amount of reserves is lower than the amount of one month spending (see Table 3-1, Figure 3-1).

To maintain the financial balance of the National Health Insurance and thus to provide the public with high-quality medical care services, the Bureau of National Health Insurance, since March 2004, has held meetings of all circles for the general

Figure 3-1 Incomes and Expenditures by Year of the National Health Insurance



Note:1.Figures based on Yearly data.
2.Data up to Dec. 2004.

Table 3-1 Incomes and Expenditures by Year of the National Health Insurance (by Responsibility)

Year	Incomes		Costs		Balance	Surplus of Safety Reserves
	Amount	Growth Rate%	Amount	Growth Rate%		
1995	1,940	--	1,568	--	371	371
1996	2,413	--	2,229	--	184	555
1997	2,436	0.96	2,376	6.58	60	616
1998	2,605	6.91	2,620	10.28	(16)	600
1999	2,649	1.69	2,859	9.10	(210)	390
2000	2,852	7.65	2,842	(0.59)	10	400
2001	2,861	0.34	3,018	6.19	(156)	243
2002	3,076	7.50	3,233	7.12	(157)	87
2003	3,368	9.48	3,371	4.29	(4)	83
2004	3,518	4.47	3,527	4.61	(9)	74
Total	27,718	---	27,644	---	74	74
1997-2004 Annual Average	2,864	4.82	2,897	5.90		

Note : 1. Insureuce incomes=lusurance premium+overdue payment+net income from capital use+share of public-interest lottery and health tax on obacco products+other net income-bad debts.
2. Insurance costs=medical costs+other financial insurance costs (subsidies on medical care for the 921 earthquake already deduced.)
3. Premium base expanded in August 2002; since September 2002, premium rate has been adjusted from 4.25% to 4.55%.

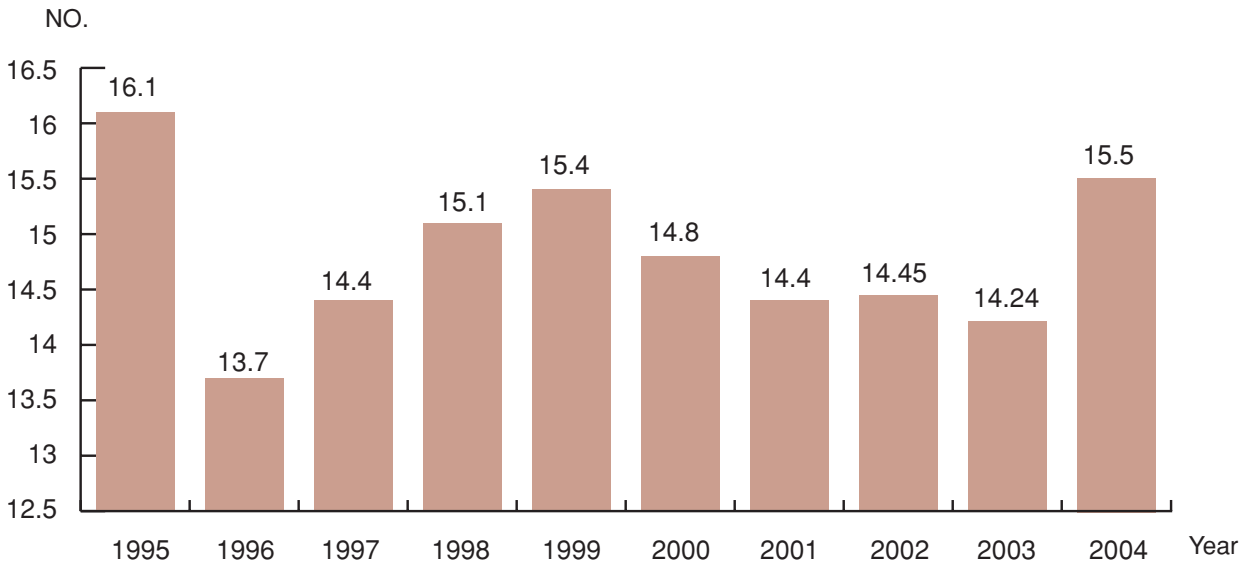
sharing of opinions. In addition, the Department, on the principle of "the health of all should be determined by all", has decided to hold public hearings on the National Health Insurance on four major issues such as: scope of payment and payment rights, eliminating wastes in medical care and improving medical care quality, administrative management and monitoring of the National Health Insurance, and increasing incomes for the National Health Insurance, to help resolve the financial dilemma of the National Health Insurance.

3. Medical Payments

To improve access to medical care of the insured, the Bureau of National Health Insurance has contracted healthcare providers around the country. By the end of 2004, there were 22,383 of them. Of them, 17,656 were hospitals and clinics, 3,898 were pharmacies, 24 were midwifery clinics, 89 were community psychiatric rehabilitation centers, 429 were home care institutions (including home hospice care institutions), 233 were medical laboratories, and 48 were physical therapy institutions. In 2004, the number of outpatient visits per person was 15.5 times, an increase of 8.89% over the 14.24 times of 2003 (Figure 3-2). Of these out-patient visits, 12.69 were visits to western clinics, 1.26 to dentists, and 1.55 to Chinese medicine clinics. For inpatient care in 2004, the average utilization rate per hundred persons care was 13.56 admissions, an increase of 9.54% over the 12.38 times of 2003. The average days of hospital stay were 9.67 days, an increase of 0.33% over the 9.64 days of 2003.

For the promotion of holistic care by family doctors and to establish community group care, by the end of 2004, 269 pilot projects in 21 counties and cities had been approved for implementation. To strengthen medical care in mountainous areas and offshore islands, a National Health Insurance

Figure 3-2 Average Number of Outpatient Visits per Person per Year



Integrated Delivery System Plan was launched stage by stage in November 1999. At present, the Plan is implemented in 48 mountainous areas and offshore islands. In 2004, a total of 400,000 some people had been served at a cost of around NT$ 3.4 billion.

The National Health Insurance has also made available four preventive healthcare services namely, health promotion for children, health promotion for adults, Pap smear examination for cervical cancer, and pre-natal care for pregnant women. By the number of persons examined in 2004, it is estimated that the utilization rates of these services in 2004 were 72.45%, 40.17%, 32.33% and 96.57%, respectively. Since July 2004, new health promotion programs such as breast examination for women above 50 years, and dental care for children have been added, The health promotion service for children has been extended to children aged of 6, and the number of visits is now nine times. Children under the age of 5 are given each year two examinations for dental care; and women of the 50-69 age groups are offered one mammography examination every two years.

As for improving the quality of drug use of the public, the Bureau of National Health Insurance, in addition to accelerating the inclusion of new medicines, is relaxing regulations on pharmaceutical payments by taking into consideration clinical needs. Regarding the inclusion of new medicines, the yearly additions were, 13 items in 1996, 54 in 1997, 75 in 1998, 42 in 1999, 36 in 2000, 73 in 2001, 56 in 2002, 50 in 2003, and 82 in 2994, The accumulated costs of these newly added medicines ran to about NT$ 12.6 billion in 2002 and NT$ 16.6 billion in 2003. To increase the options in drug use and reduce patients' financial burdens, payment restrictions have been relaxed. In 2004, payment regulations concerning oral Antiemetic drugs for cancer patients under chemotherapy and patients of autoimmune disorder, no requirement for advance review of anti-cancer drugs, oral drugs for non-small cell lung cancer, and drugs for acute septicemia had been adjusted.

4. Payment System

To reasonably contain medical costs, and to promote the equal allocation of medical resources, the overall implementation of the global budget payment system began in July 2002. At the micro-level, the payment schemes and the claim review system have been reformed. Measures include payments for

Table 3-2 Growth Rate of Medical Costs by Year of the National Health Insurance

Category	Year	2001		2002		2003	2004	2005
		First half-Year	Second half-Year	First half-Year	Second half-Year			
	Range approved by the Executive Yuan	2.21-4.54%		1.67-4.00%		1.55-4.02%	0.51-4.00%	1.34-4.03%
Negotiation committee	Negotiated by the NHI Medical Expenditure	4.11%		2.342-3.707%	3.883%	3.899%	3.813%	3.605%
	Global Dental Outpatient	3.32%		2.50%		2.48%	2.64%	2.9%
	Chinese medicine Outpatient	6.33%	3%	2.00%		2.07%	2.41%	2.51%
	Western medicine Outpatient	2.21-3.97% (targets)		3.727%		2.898%	2.70%	3.228%
	Hospital	2.21-3.97% (targets)		1.61-3.727% (targets)	4%	4.01%	4.10%	3.53%
	Other	—		—		Additional NT $1.3 billion	Additional NT $1 billion	Additional NT $1.14 billion

Note : 1. The first phase of the global budger payment system for the chinese medicine outpatient was from July 2000 to june 2001; and the second phase, from july to December 2001.
2. The first phase of the global budget payment system for western mdeicine primary care was from July 2001 to December 2002.
3. The first phase of the global budget payment system for hospitals was from July to December 2002.

quality of service rendered (such as a plan to improve payment for five major diseases, and a pilot project for integrated medical care by family doctors), expansion of the plan for case payment, and study on the formulation of a table of payment schedules based on comparative values. These measures aim at establishing a system moving from case-by-case review toward medical care pattern review based on profile analysis.

In accordance with regulations of the National Health Insurance Act, the global budget for the year is proposed by the Department before the start of a fiscal year. After approval by the Executive Yuan, the budget is referred to the NHI Medical Expenditure Negotiation Committee, which will call the payers and the healthcare providers to a meeting to reach an agreement on the total amount and the way of allocation. The results of negotiation by year are shown in Table 3-2.

The payment schedules for medical costs are reviewed and amended constantly in order to encourage the improvement of medical care quality, and to reasonably reflect the comparative values of the payment points to promote the balanced development of the various departments and the hospitals at all levels. The major adjustments made in 2004 include: to reflect the use of resources by patients of acute and severe illnesses, their inpatient diagnosis fees had been adjusted upward (such as burn units, ICUs, isolation beds, and beds of moderately and severely ill newborns), and payment points for diagnosis at emergencies had also been adjusted upward. To reflect the reasonable consumption of resources, to improve payment schedule structures, tables of payment schedules based on comparative values had been formulated and brought in for implementation. On July 2004, 1,219 items were adjusted upward, and 160 items adjusted downward. To provide renal failure patients with more efficient medical care, the case payment for kidney transplantation patients and

Table 3-3 Reduction Rates After Review of Claims for Outpatient and Inpatient Medical Costs to the National Health Insurance

Year	Reduction rate after initial review	Reduction rate after review	Reduction rate after dispute mediation
1997	3.28%	2.34%	2.21%
1998	2.73%	1.96%	1.81%
1999	3.48%	2.75%	2.53%
2000	2.97%	2.34%	2.15%
2001	2.45%	1.89%	1.69%
2002	2.21%	1.67%	1.54%
2003	1.27%	1.03%	1.01%

Note: Please note there was SARS outbreak in 2003.

payments points for successive peritodialysis were added. To upgrade the quality of dental care services, diagnosis fees at outpatient clinics for infection control were added. To upgrade the quality of medical care by Chinese medicine, diagnosis fees for the use of auxiliary aids such as transutaneous electro-nerve stimulation (TENS) and acupuncture by Chinese medicine were added. Treatment with galvano-acupuncture and acupuncture, if they meet standard operational procedures and are qualified by review, additional payments would be made. Plans such as "improving the quality of life of cancer patients, intensive care for some specific diseases, and pilot project on the establishment of demonstration outpatient clinics", and "intensifying infection control" were implemented.

The review and administrative relief for the National Health Insurance medical costs come in initial review, reply, re-deliberation, dispute mediation, appeal and administrative litigation. The initial review is made by procedure review and professional review. The professional review of the global budgets for dentistry, Chinese medicine and western medicine primary care have been commissioned to the respective national joint associations. By the end of 2004, 1,269 review doctors had been recruited. The rates of reduction of outpatient and inpatient medical costs by year are shown in Table 3-3.

For dentistry, a pilot project, "re-deliberation of cases of extraordinary management by dentists", was tried out by the Southern Region Branch of the Bureau of National Health Insurance in 2002. For western primary care, the Central Region Branch tried out in 2004 a "re-deliberation operation of the global budget payment system for western primary care ".

To perfect the functions of the mediation on National Health Insurance disputes, a review system was established based on evidence-based medicine. It is intended to raise the quality of medical care and to protect the rights and interest of patients through the analysis of ethical, legal and economic policies. In 2004, a case-review meeting of evidence-based medicine was held to establish principles for the review. In 2004, the Department had received 410 appeals; of them, 96, or 23.41%, concerned the National Health Insurance.

5. Health Insurance IC Card

To meet the requirement of the electronic age and improve the insurance and medical records, on January 1, 2004, the health insurance IC card was put in use throughout the nation. With the card, the

insured can get safer and more convenient services. The IC card has replaced and put together the paper card, children's health handbook, and health handbook for pregnant women of the past. As the IC card can be used without renewal for the next five to seven years, it has saved time of the insured and much of the insurer's administrative manpower. This is consistent with the goal of "all cards in one, and one care for all." As the IC card contains all medical information of the holder, it also contributes to disease control to protect the health of the people.

The name-card size health insurance IC card contains a small IC chip that provides enough memory for use and is divided into the "personal information sector", "health insurance data sector", "special medical care sector", and "health administration special sector" for the storing of data. In the first stage of the IC card use, from January 1 to October 31, 2004, the card contains only the personal information of the holder, such as the name, ID number, date of birth, medical record number, dates and names of medical care institutions of the last six visits, and the number of visits for preventive healthcare. The purpose of the IC card is same as the paper card, involving no privacy.

The implementation contents and time of the second phase was planned soon after the implementation of the first stage. Meetings were held to share comments of the medical circles, the patients' groups, and public-interests organizations to reach a consensus. Beginning November 1, 2004, more functions for information concerning organ donation, notes on severe illnesses and injuries, major regulations concerning medical care, successive prescriptions for chronic diseases, prescriptions issued at outpatient clinics, primary and secondary diagnosis at outpatient and inpatient clinics, have been added. These newly-added functions should help contain medical costs, are also substantially beneficial to raising the quality of medical care and protecting the health of the people.

As to the issue of privacy protection of medication that is a major concern of the public, the medical record is written on the IC card by the physician at time of diagnosis; it cannot be read by an ordinary person. A code number can be set by the insured, and medical record cannot be read until the code number is input. The IC card, therefore, is more privacy-protective than the conventional paper card. In the future, when new information is to be added, public-interest organizations will be consulted to maintain a balance between health and privacy, to give considerations to social public interest, and will only be promoted when a consensus is reached.

6. Reform of Health Insurance

To promote the mid- and long-term reform plans of the National Health Insurance, the Executive Yuan's Task Group for the Planning of the Second-Generation Health Insurance was set up on July 1, 2001. After three years, the mission of the Task Group was completed in 2004. A final report under the principles of "enhancement of quality", "financial balance", and "enlargement of participation", focusing on a health insurance system consistent between financial rights and duties was prepared by the Task Force. Some recommendations are:

1. Strengthening the Supply of Information to Upgrade the Quality of Medical Care
   1) Government agencies concerned should set up channels for the participation of the public in the formulation of quality policies; they should also provide directories for medical care and information on medical care quality.
   2) Medical care professions should take part in the formulation of indexes on medical care quality and quality assurance mechanism; a two-way mechanism for the feedback of information should be set up.
   3) The Bureau of National Health Insurance should assure the quality of the manuals of the insured; it should establish a virtuous competition mechanism within the organization; it should also set up a platform for the National Health Insurance information.
   4) A unit fully responsible for the quality of the National Health Insurance should be set up to realize the quality policies.
2. Balancing the Finance and Improving the Purchasing Efficiency for Services
   1) Reform plan on sources of incomes: the categorization of the insured should be abolished; the total incomes of the household will be used as a

basis for insurance premium; the government and the employers will share the insurance premiums by a certain formula; the payers representatives will vote on the payment scopes of the National Health Insurance and the amount of co-payment.

2) Reform plan on allocation of resources: a task group on the allocation of health insurance resources should be set up for the review and periodic discussion on the contents of payments.

3) A payment system consistent between rights and duties should be set up; institutions under contract may organize alliances. The rights and duties of the insurer and the medical circles on the global budget under common management should be clearly specified; the professional self-governing capabilities and responsibilities of the units commissioned with the global budget should be strengthened.

3. Enlargement of Pluralistic Social Participation in Health Insurance Policies

1) Channels and capabilities within the organization for more social organizations to participate in affairs concerning health insurance should be strengthened.

2) Equal opportunity should be made available to the public to participate in matters concerning health insurance.

4. Establishing a Health Insurance Organization Consistent between Rights and Duties

A two-stage organizational reform is suggested. In the first stage, the NHI Supervisory Committee and the NHI Medical Expenditure Negotiation Committee will be merged into a National Health Insurance Committee to become a mechanism for the balance of incomes and expenditures. In the second stage, the existing Bureau of National Health Insurance and health insurance-related units of the Department (the Health Insurance Task Force, the Supervisory Committee, and the Medical Expenditure Negotiation Committee) will be merged to become an administrative corporate National Health Insurance Institution to be responsible for the formulation of policies and their execution.

To realize the recommendations for the second-generation health insurance, the above-mentioned plans will be used as a blueprint to promote overall communication and to plan for their implementation. Laws and regulations governing the National Health Insurance will be at the same time amended, hoping to reach the goals of "improving the health of all" and the "everlasting management of the National Health Insurance".

IV. Medical Care Systems

IV. Medical Care Systems

To face the aging of population and the impact of emerging communicable diseases on the medical care environment of Taiwan, and to provide the people with comprehensive and integrated medical care services, plans have been formulated by the Department to improve the quality of medical care with a view to construct a system to care for the health of all. The main purposes are:

1. To promote the reasonable distribution of medical care resources, and thus to provide the people with adequate and accessible medical care services;
2. To construct community-based health and medical care systems to strengthen primary care, and thus to provide the people with comprehensive and continuing health and medical care services;
3. To face the aging of population and to attend to the special medical care needs of the less privileged groups, efforts have been made to strengthen special medical care systems, to actively develop professional manpower and medical institutions for the special care systems, to enhance the development of all systems, and thus to improve the overall quality of medical care.
4. To construct a patient-oriented medical care operation and environment, and thus to promote the overall care quality of medical institutions;
5. To promote general training in medicine and to strengthen the specialist training system, and through the promotion of various enhancement plans of medical care quality, to provide the people with holistic medical care services.

1. Medical Manpower

By the goals of the fourth-stage plan of the Medical Care Network, by the end of 2004, the number of western medicine doctors per 10,000 population was set at 13.3. In reality, by the end of 2004, the number of western medicine doctors per 10,000 population was 14.7; that is, one western medicine doctor on average served 671 persons. The goal of 13.3 western medicine doctors per 10,000 set out by the fourth-stage plan of the Medical Care Network has been attained. In the future, the development of physician manpower will shift from the quantitative growth to focus, in coordination with economic development and changes in social and demographic patterns, on the distribution of human resources of physicians, and to set up periodic assessment systems to establish an adequate allocation of medical care service manpower.

To augment physician manpower in remote areas and to balance the distribution of physician manpower by specialties, the government has, since 1975, made efforts to train doctors on government scholarship. This program was transferred from the Ministry of Education to the Department in 1993. By the end of 2004, 5,864 doctors had been trained on government scholarship; and of them, 1,309 are currently rendering their obligatory services, 672 working in special branches of medicine, and 337 fulfilling their second-phase services. Of them, 13 are working in mountain areas and offshore islands, and 48 at 11 DOH hospitals designated to support medical care in mountain areas and offshore islands. The rest are serving in health stations and public non-teaching hospitals.

To strengthen the social functions of the DOH hospitals, to support medical care in remote areas, and to stabilize the medical care manpower in remote areas, beginning 2005, all government scholarship-trained physicians must serve in the DOH hospitals for six years. During their stay at the DOH hospitals, they are assigned on regular basis to serve in remote areas.

To encourage doctors to undergo complete professional training in clinical medicine, and to continuously absorb new knowledge, in accordance with provisions of the Regulations Governing the Specialization and Qualification of Physicians, the

Department has entrusted various professional medical societies to review and screen the qualifications of specialist physicians. To balance the distribution of physicians by specialty, beginning in 2001, the specialist training hospitals are re-assessed and recognized every year. By the recognition of training hospitals and the quota of specialists approved for each specialist training hospital, a certain standard of the training of specialists is maintained and the distribution of specialists is balanced.

Since the announcement of the Regulations Governing the Specialization and Qualification of Physicians till the end of 2004, 25 specialties had been established; of them, two sub-specialties are sub-branches of dentistry specialty. In the same period, the Department had issued specialist licenses to 34,039 person-times. In addition, outstanding physicians in eight specialties, geriatrics, genetic medicine, occupational medicine, nuclear medicine, anatomical pathology, clinical pathology, radiology therapy, and forensic medicine are selected and subsidized for training abroad. In 2004, five physicians were selected for advanced training. In this way, specialists in departments that are hard to recruit physicians will have opportunities to improve their knowledge and enhance their professional growth.

To enhance the concepts and capabilities of physicians in the holistic care of patients and to realize the concept of the patient-centered holistic medical care, the Department, since 2003, has actively promoted the Plan for the Training in General Medicine after Graduation. The Plan offers physicians a three-month course in general medicine, one month in general internal medicine, one month in general surgery, and one month in community medicine. Through this training, the organic disease-oriented care models of physicians can be corrected; and physicians can, from the viewpoint of holistic medicine, practice the patient-centered medical care to provide patients with more comprehensive care.

A holistic healthcare plan has thus been formulated. By the epidemiological surveys of psychiatric diseases, the incidence of psychiatric diseases is 3 per 1,000; and of these patients, about one-third are serious enough requiring hospital care. By the growth of population, in 2005, 2.55 beds for acute psychiatric patients per 10,000 population, and 6.72 chronic beds would be required. In 2006, these figures would increase to 2.78 acute beds and 6.72 chronic beds; in 2007, they are 2.87 beds and 6.83 beds, respectively; and in 2008, they would be 3 beds and 7 beds, respectively (Table 4-1). The distribution of medical personnel by category is shown in Table 4-2.

Table 4-1 Goals of the Growth of Medical Care Resources

The Quality of Medical care with a view to construct a system	end 2003	end 2005	end 2006	end 2007	end 2008
Acute beds per 10,000	30.4	30.95	31.0	31.05	31.1
Acute psychiatric beds per 10,000	2.4	2.55	2.78	2.87	3.0
Psychiatric beds per 10,000	6.3	6.65	6.72	6.83	7.0

Table 4-2 Medical Manpower

Category	No.licensed	No.In Practice	No.In Practice/10,000
Physicians	48,121	32,694	14.70
Chinese medicine doctors	10,360	4,714	2.08
Dentists	13,030	9,929	4.38
Pharmacists	31,788	19,666	8.67
Assistaint pharmacists	12,645	7,494	3.30
Registered profressional nurses	116,106	72,810	32.09
Registered nurses	170,962	30,775	13.56
Midwives	53,103	547	0.24
Medical technologists	14,204	7,211	3.18
Medical technicians	1,249	350	0.15
Dietitians	4,039	1,732	0.76
Physical therapists	3,584	2,260	1.00
Physical therapy technicians	2,449	1,296	0.57
Occupational therapists	1,663	1,145	0.50
Occupational therapy technicians	340	111	0.05
Medical radiological technologists	4,573	3,436	1.51
Medical radiological technicians	376	254	0.11

Notes:1.Population at the end of 2004 was 22,689,122.

2.Date up to December 2004

2. Medical Care Technology and Facilities

■ Specific Medical Care Technology and Management of Medical Care Instruments

The Department, in accordance with regulations of Paragraph 2, Article 62 of the Medical Care Act, formulated and announced for implementation on December 24, 2003, a set of Regulations Governing Management of the Application or Use of Specific Medical Care Technology and Medical Instruments for Testing and Examination. This set of Regulations regulates that medical care institutions,

when applying or using specific technology for testing and examination, the items of testing and examination must, by regulations, be registered with the local municipal or county (city) competent authorities before they can be applied or used. By the end of 2004, 19 medical care technologies and instruments in this category had been announced .

In accordance with provisions of the Regulations Governing the Review and Assessment of Expensive or Dangerous Medical Care Instruments for Procurement and Use by Medical Care Institutions, two either expensive or dangerous medical care instruments Positron Emission Tomgraphy and Cyclotron, are placed under control.

Medical Care Wastes

By regulations of the Waste Disposal Act, the infectious medical care wastes under the category of hazardous wastes produced by institutions must be incinerated or sterilized before buried finally. The Department, together with the Environmental Protection Administration of the Executive Yuan, announced on December 28, 2001, a set of Regulations Governing Management of the Joint Disposal Institutions for Medical Care Wastes. By the end of 2004, six joint disposal institutions for medical care wastes had been supervised to renew their permit licenses for operation. Thus far, there are 16 public and private incinerators and joint disposal institutions for medical care wastes capable of handling more than 167 tons of wastes per day, sufficient to handle the 45 tons of infectious medical care wastes now produced each day.

To save the use of natural resources, reduce production of wastes, promote recycling and reuse of materials, lessen burdens on the environment, enhance the everlasting use of resources, the Department, since 2000, has, through education and promotion on waste-reduction and material-recycling, actively supervised medical care institutions to properly manage and dispose wastes, and thus to save operational costs, promote the reuse of materials and improve the quality and efficiency of medical care.

Since 2003, through national competitions on the reduction of medical care wastes and recycling and reuse of resources, hospitals are encouraged to implement the policies of the Department, and be models for other hospitals to learn from. In 2004, medical care institutions such as the Kaohsiung Medical University Hospital, Talin Branch of the Tzu Chi Hospital, Taitung Branch of the Mckay Hospital, the Catholic St. Paul Hospital, the Catholic St, Martin Hospital, Chi Mei Hospital, and the DOH Taipei Hospital had won awards from either the Department of the Environmental Protection Administration. To promote an effective mechanism for the recycling and reuse of resources, on July 9, 2004, a set of Regulations Government Management of the Recycling and Reuse of Resources was announced by the Department. On July 27, 2004, more items, the “used sharp-pointed devices”, “used films” and “used film developer” were added for the management. Currently, there are nine items of medical care wastes that can be recycled and reused.

3. Quality of Medical Care

1. The functions of the committee on medical care quality will be strengthened; annual priority directions of medical care quality will be planned; and plans for the promotion of medical care quality will be implemented. The priority projects on quality in 2004 included the promotion of evidence-based medicine, medical care quality circles, quality of radiological therapy, quality of obstetrics and gynecology care, quality of pathological examination, learning type organization activities, medical care quality indicators, payment for quality of service rendered for breast cancer, and quality of blood transfusion. Plan has been drafted to establish a third party impartial institution, the Healthcare Promotion Center, to be a supply center for information on medical care quality and a monitoring organization, and be responsible for the execution of relevant research and manpower development.
2. Policies on the protection of the safety of patients will be realized.
   1) Plans and activities for the promotion of patient

safety will be studied and implemented; and epidemiological surveys on the safety of patients will be conducted. In 2004, in addition to formulating definitions related to patient safety, plans had also be drafted to establish a voluntary, non-punitive reporting system for adverse medical incidents; and to supervise medical care institutions to set up patient safety committees to construct a safe medical care environment. In November 2004, a patient safety week was held by coordinating efforts of the medical circles, media and private sector organizations to jointly promote the concept of patient safety and to build up a partnership for the safety of patients.

2) To realize the patient-centered medical care, in 2004, a set of Guidelines on the Safe Operation of Clinics, and another set of Guidelines on the Safe Operation of Hospitals were announced to serve as references for medical personnel in performing medical care duties. Training had also been organized. Patient safety has been made one of the items for health bureaus in the accreditation of medical care institutions. Regular and unscheduled evaluation has been strengthened. Training programs on the safety of patients have been organized for key persons of medical care institutions, physicians, nurses, pharmaceutical personnel, administrators of health agencies and the general public.

3. The accreditation of hospitals will be reformed.
Both the "patient-centered service" and "patient safety" will be the directions of reform. Items of accreditation will start with the structural assessment to assessment of the process and outcomes. The accreditation system will be directed toward hospital functions and quality of medical care, focusing on the provision of safe, effective, patient-centered, timely, efficient and high-quality services as the goal.

1) To understand efforts of hospitals in making corrections of the shortcomings discussed and detected on hospital accreditations, a regular and unscheduled follow-up and supervision system has been set up. In 2004, 113 hospitals had been followed-up.

2) A new accreditation system focusing on medical care quality and community service concepts has been developed. In 2004, the system had been tried on pilot basis in ten hospitals to understand the feasibility of the new system, and also to solicit comments of hospitals. New criteria of hospital accreditation have been developed and implemented in 2005.

3) A plan began in 2004 to reform the accreditation of teaching hospitals, focusing on accreditation of the functions of teaching and training, and the process of teaching and outcomes, to upgrade the quality of physicians and to improve the overall quality of medical care.

4. Emergency Medical Care Services

Some important measures and achievements in emergency medical care services promoted by the Department up to the end of 2004 are summarized as follows:

1. On December 20, 2004, the amendment of the Regulations Governing emergency disaster response measures and inspection in hospitals
2. In 2004, the establishment of emergency operation centers at the central level, and in the central、southern and Taipei regions had been completed.
3. Counseling and testing for the control of clinical toxic substances has been strengthened.
   1) In 2004, six regional chemical hazards coordination centers, including the National Taiwan University Hospital (for the Taipei region), had been supervised to integrate the service functions of the toxic and chemical rescue responsibility hospitals and hospitals for the decontamination and safekeeping of personal protection devices. Training programs have also been organized.
   2) In 2004, the Taipei Veterans' General Hospital was made the Execution Center of poison control center to be responsible for the integration of counseling platforms, division of counseling services by region, development of counseling

manpower, integration of counseling databanks, publication of journals on counseling services, and establishment of expert windows for counseling.

3) The Taipei Veterans' General Hospital has been supervised to set up a specific antidote control center to be responsible for the allocation of specific antidotes, their reporting, supply and replacement. The services are now shared by 52 hospitals in the northern, central, southern and eastern regions.

4. The emergency rescue and medical care system for nuclear hazards has been strengthened.
   An advisory group on the emergency rescue and radiation medical care and an emergency care network for nuclear hazards has been established. Nine level-2 and eight level-3 emergency care responsibility hospitals for nuclear hazards have been set up.
5. The National Taiwan University Hospital and the National Chengkung University Hospital have been subsidized to set up a national disaster medical assistant team to meet the emergency medical care needs of major disasters.
6. Medical care institutions have been supervised to strengthen capabilities in emergency rescue and medical care. In 2004, six drills on the care of mass casualties had been held. The ICS commanding system for the emergency rescue and medical care of mass casualties and emergency incidents has been established. Drills on emergency care by hospital have been held for three hospitals. Medical care institutions have been supervised to strengthen the organization of emergency rescue and medical care and commanding framework in hospital. 216 hospitals have been designated emergency rescue and medical care responsibility hospitals to provide 24-hour services in emergency care.
7. Manpower for emergency rescue and medical care has been strengthened; CPR training has been offered to the general public.
   By the end of 2004, 635 emergency care specialist doctors, 5,775 primary-level emergency medical teclinicians, 5,579 middle-level emergency medical teclinicians, and 153 high-level emergency medical teclinicians had been trained. About 110,000 persons had taken part in the training of CPR.
8. A reporting system of beds for critically and severely ill patients has been established to prevent the severely ill patients from overstaying in emergency wards.
9. Communications and information system for emergency care has been strengthened.
   County and city health bureaus have been subsidized to install communications facilities to stay on the common national emergency care frequency, and to renew functions of various management systems. Each year, two testing on the national emergency radio communications are held. Each month, the health bureaus conduct testing of the radio communications in their locality to improve the efficiency of emergency rescue and medical care.
10. A referral system for the emergency care quality of the newborns and a referral system for high-risk pregnancies have been promoted.
    By the end of 2004, 410 medical care institutions had joined the referral system for the emergency care of the newborns, and 66 medical care institutions had joined the referral system for high-risk pregnancies. The standard of the emergency care of the newborns and the high-risk pregnant women has thus been upgraded.

5. Prevention and Control of Psychiatric Diseases

Important measures and achievements in the prevention and control of psychiatric diseases in 2004 are summarized as follows:

1. Strengthening of the administrative system for mental health: One special unit each has been set up at the national and county/city levels. One person has been assigned specifically for the administration of mental health programs.
2. Improving the service network for psychiatric care: Since 1986, the Taiwan Area has been divided, according to geographic conditions, population

and resource distribution, into seven responsibility regions. A core hospital is designated for each region to set up a regional psychiatric care network, to develop manpower, to support other hospitals in the network, and to strengthen the management of patient referral and case follow-up.

3. Development of professional manpower for psychiatric care: Specific measures include salary increments for psychiatrists, assignment of medical students trained on government scholarship to work in psychiatric care, encouragement of medical students to specialize in psychiatric care, continuing education for psychiatric care personnel, offering of opportunities for advanced training locally or overseas for psychiatric care personnel, and training of primary care workers in psychiatric care.
4. Promotion of mental health: To meet the public's demand for mental health services, a Clinical Psychologist Act was promulgated by the President of the Republic on November 21, 2001. Counties and cities have been subsidized to set up year by year community mental health centers. By the end of 2004, 22 such centers had been set up; and four counties (Taoyuan, Hsinchu, Miaoli and Lienchiang) had been subsidized to offer mental health promotion, counseling services and health education. The emergency care stage of the mental health reconstruction project for victims of the September 21, 1999 earthquake was completed on June 30, 2000. In the stages of long-term reconstruction, 2000 to 2004, a mental health service center was set up each in Taichung and Nantou areas. They, together with the Taipei Municipal Psychiatric Center, offer services in mental health counseling, education, suicide prevention, drug-abuse prevention and follow-up of cases of trauma syndromes.
5. Prevention of suicides: On March 5, 2001, the Department invited the Ministry of the Interior, Ministry of Education, Council of Labor Affairs, and Government Information Office to organize a Suicide Prevention Task Force, calling on the participating agencies to prevent suicide within their powers and responsibilities. County and city health bureaus are made centers for the referral and consolidation of case information to build a close resource-sharing network. In 2004, 24 health bureaus had each set up a suicide case reporting system to provide services in the follow-up, supervision and referral of cases. To effectively reduce suicide rate, after some deliberations, an overall National Suicide Prevention Strategic Action Plan was formulated. The Plan includes matters such as the establishment of a suicide prevention center on December 9.2005, and studies on the prevention models of suicide. Follow-up and supervision of attempted suicide cases are made. In 2004, 3,440 attempted suicide cases had been placed under management; 2,425 person-times of home visits and 5,529 person-times of telephone interview had been made; and 428 suicide cases had been referred.
6. Subsidies for the mandatory hospital care of patients: By regulations of the Mental Health Act, the Department in 2004 designated 87 psychiatric care institutions for the mandatory hospital care of severely ill psychiatric patients. Mandatory assessment of severely ill psychiatric patients and subsidies for the medical costs of the hospital care of these patients are continued, and thus to remove barriers to mandatory hospital care, to offer patients adequate medical care, and to maintain social harmony.
7. Education and publicity: Each year, county and city health bureaus, Friends of Recovery Association, ROC Psychological Association, John Tung's Foundation, the ROC Chapter of the International Lifeline and the ROC Autism Association are subsidized to conduct mental health education activities. To educate the public ways to stay away from melancholia and to prevent suicide, activities entitled "Value Life; Live in Luster" have been organized to advocate the concept of "Preventing Suicide: Your Responsibility".
8. Prevention of domestic violence and sexual assault: Seminars have been held and training of professionals organized. A reporting and coordination system has been set up. Medical care ser-

vices for victims as well as treatment and correction of abusers have been strengthened. Indigenous treatment models have been developed and their effectiveness assessed.

6. Post-SARS Reform of Medical Care Systems

The sudden outbreak of SARS in Taiwan in March through June 2003 initiated an unprecedented war against disease by all citizens of the country in concerted efforts. The disease though had brought enormous traumas on the health of the population and on the society and the economy, Taiwan was finally on June 17 and July 5 removed from the WHO lists of travel alarm and affected area, respectively. The period that Taiwan was on these WHO lists of travel alarm and affected area was, compared to other affected areas, shorter; and the per 100,000 infection rate was also lower than that of other epidemic areas.

The crisis brought about by SARS was in a way a turn for the better. In the battles against SARS, the disease control, public health and medical care systems of Taiwan had faced a hitherto unknown trial; and it was an opportunity for Taiwan to carefully review the shortcomings of the entire public health and medical care systems. In the process of reform, a series of post-SARS reform of medical care systems began one by one in the second half of 2003. The reform focuses on the quality of medical care, re-establishment of mental health systems, a community-based medical care system for health promotion and disease control, and reform of the functions of public hospitals, with an aim to provide the public with holistic medical care services. These activities are summarized as follows:

1. Establishment of a Community-Based Medical Care System for Health Promotion and Disease Control

   To strengthen cooperation interaction between health bureaus, health stations, and primary care clinics and hospitals, and thus to strengthen the public health functions of primary care, the Department began in 2004 to promote a pilot project on the integrated services in public health (disease control) in community. In 2004, 13 such community public health groups had been subsidized to establish. They have been helpful in improving the quality of primary care, and in encouraging the public to develop correct medical care behavior. In addition, information platforms for medical care institutions to share and exchange medical care information have been established to integrate information on health administration, disease control and health insurance.
2. Reconstruction of the Functions of Public Hospitals
   1) One each public hospital in the northern, central and southern regions was promoted to set up a community medicine training demonstration center. They are: the DOH Taoyuan Hospital, Taichung Hospital, Chishan Hospital and Hualien Hospital.
   2) Public hospitals have been supervised to implement on pilot basis plans for the control of infectious diseases, disaster management, training in urban-type community medicine, establishment of safe environment, concerns over community services, or provision of high-quality medical care. The northern, central, southern and eastern regions have been subsidized to set up community medicine training demonstration centers. In coordination with the alliances of the DOH hospitals, functions of public hospitals have been reconstructed to improve operation effects, and to provide the public with more community-concerned, convenient, intimate and high-quality medical care.

7. Long-Term Care

1. A “single-window” system for long-term care has been implemented. Counties and cities have been promoted to establish “long-term care management centers”, to set up care resources management systems for the integration of resources, assessment of individual needs, referral of cases, and display and rental of auxiliary aids. The 25 counties and cities had all set up such centers in

2004.

2. Subsidies have been made, through the Medical Care Development Fund, to nursing homes on the interest payments of housing. Public hospitals have been supervised to use idle beds to set up nursing homes. Nursing homes affiliated to private hospitals and independent-type nursing homes have also been supervised. By the end of 2004, there were 250 nursing homes with 13,799 beds, averaging 326.8 beds per 100,000 elderly.
3. Home nursing care services have been promoted in mountain areas, offshore islands and rural areas; and public and private hospitals and nursing homes have been supervised to promote home nursing care services. By the end of 2004, 443 home nursing care institutions had been set up.
4. Since 1999, the respite care service has been promoted. A case is subsidized by the competent health authorities NT$ 1,000 per day for up to seven days a year. In 2004, 2,452 cases had been subsidized.
5. Development of long-term care manpower has been strengthened. Training programs have been offered to physicians, nursing personnel, occupational therapists, patient-service workers and other medical personnel.
6. Service quality of long-term care has been strengthened. In collaboration with county/city health bureaus, nursing care institutions throughout the country have been visited and inspected. A total of 154 home nursing care institutions have been inspected; and 85 hospitals have been supervised to implement pre-discharge services to patients.

8. Health and Medical Care in Mountain Areas and on Offshore Islands

Mountain areas and offshore islands, as compared to other areas, for insufficiency in medical resources and manpower, and restrictions by geographic conditions, their life and accessibility to medical care are greatly affected. To narrow the discrepancy in health and medical care between urban and rural areas, the Department has striven to improve the medical care facilities of local health stations, provide a safe medical care environment, raise the professional skills of medical and nursing personnel, implement various health and medical care measures, and promote the Plan for Community Health Building in indigenous and Offshore Islands, with a view to improve the quality of health and medical care, and to create healthy communities.

The current key measures and achievements of this effort are summarized as follows:

Development of Medical Manpower

1. A Plan for Cultivating Native Medical Personnel was launched in 1969 in an effort to train indigenous and offshore medical personnel with government scholarship and assign them to serve in their hometowns. The Plan was consolidated in 2002 with similar plans in Kinmen and Matsu. By the end of 2004, 251 physicians had been trained this way; of them, 94 have completed their service in hometowns, and 59 are still working.
2. Assignment is made for young men with medical background who are serving substitute military service to remote areas of indigenous or offshore islands to improve medical manpower and raise the medical care standards in these areas. Between 2000 and 2003, 375 had been assigned.

Strengthening of Medical Care Resources and Facilities

1. Health and medical care facilities have been improved. In 2004, five health stations and health rooms in mountain areas and six on offshore islands had been subsidized either for reconstruction or procurement of facilities and equipment.
2. Medical care resources of primary care institutions and hospitals have been consolidated and the strength of the academics and the private sectors is enlisted to support medical care, and to promote the IDS (Integrated Delivery System) program to attain the goal of “medical care in every township; support in every village”.
3. On the offshore islands, medical care is supported by public and private hospitals and military hospi-

tals. Besides, the Bureau of National Health Insurance has implemented an IDS plan to support specialty medical care, medical care at fixed points and on holidays, mobile outpatient services, and commissioning of medical care services. County hospitals have been helped to affiliate to other organizations. All these efforts are intended to integrate medical care resources and improve the medical care of the locality.

Protecting the Health of the Residents of indigenous and Offshore Areas and their Rights to Medical Care

1. The Council of Indigenous Peoples has been coordinated to subsidize the indigenous people their insurance premiums to reduce their burdens on medical care, and thus to make services of the National Health Insurance more available to all.
2. Health education is being carried out in earnest for indigenous to promote their health.
3. Community health building in tribes has been actively promoted. Thus far, there are 57 community health building centers and seven community health building promotion centers in tribes and on offshore islands. In 2004, training of volunteers and volunteer management had been strengthened; schools had been subsidized to set up credit courses for volunteers in indigenous and offshore to improve their professional knowledge, and also for the everlasting management of health building in tribes and offshore islands.
4. Transportation system for emergency care has been strengthened. For the medical care of residents on offshore islands, a national air rescue system has been established to transport patients requiring emergency care by helicopters, and to subsidize the transportation costs for medical care to Taiwan proper.
5. In the three-year period between 2003 and 2005, scholars and experts had been commissioned to provide various screening services at fixed points to residents of 30 years and above in the mountain areas on hypertension, hypercholesterol and diabetes mellitus, breast cancer, liver cancer, colon-rectum cancer, oral cavity disorders, cervical cancer, prostate cancer, uric acid, and bone density, and to set up a case follow-up management system.

Telemedicine

1. Establishment of a tele-consultation system: This is intended to provide medical care services to residents of mountain areas by medical centers through tele-consultation and tele-teaching. Thus far, 27 units have been placed online. They are the National Taiwan University Hospital connected to Wulai Township Health Station of Taipei County and Jenai Township Health Station of Nantou County; the Taipei Veterans' General Hospital connected to the Kinmen County Hospital, Ilan County Health Bureau, and health stations of Lanyu and Lutao Townships of Taitung County, Lishan Village of Taichung County, Hsinyi Township of Nantou County, and the Kinmen Liehyu Hospital; the National Chengkung University Hospital connected to Hsiyu Township Health Station, DOH Penghu Hospital, the Army Penghu Hospital, and health stations of Alishan Township of Chiayi County, Wangan and Paisha Townships of Penghu County, Santimen Township of Pingtung County; the Tri-Service General Hospital connected to the Lienchiang County Hospital, the Army Matsu Hospital, Pei-kao Hospital, Tungying Hospital, Lienchiang County Health Bureau, and health stations of Tungchu, Hsichu, Tungyin and Peikan; and the Tzuchi General Hospital connected to Hsiolin Township Health Station of Hualien County and Haituan Township Health Station of Taitung County.
2. the tele-consultation system: This is implemented according to the needs of a locality, and is intended to provide training to physicians, medical personnel and administrators, and to raise the quality of primary care.

V. Control of Communicable Diseases

V. Control of Communicable Diseases

1.Disease Surveillance and Investigations

1. The Novel Influenza was announced to a designated disease on December 30 2004 for facing the threat, the related reporting systems and a subsystem for contracted viral infection laboratories were set up; the logics on the laboratory findings of the Novel Influenza turning into positive was integrated. As soon as the Novel Influenza suspected case was reported, all relevant disease control personnel were automatically informed by mobile phone messages for taking disease control measures timely.
2. An integrated national disease control information network was established. The network contains information from the syndromic surveillance, daily management of the hospital care of patients of emerging communicable diseases, geographic information on infectious disease, e-bulletin board, notifiable communicable disease surveillance, sentinel physicians reporting, communicable disease surveillance in densely populated institutions, and school surveillance. The occurrence of notifiable diseases in 2004 in the Taiwan Area is shown in Table 5-1.
3. In 2004, a total of 9 trainees attained the 19th Field Epidemiology Training Program (FETP) training class. They and trainees of the 18th class accomplished fifteen outbreak and unknown cause investigations as shown in Table 5-2. In addition, 586 persons (26 classes) from different health agencies completed middle or elementary level training of field epidemiology courses.

2.Control of Emerging Communicable Diseases

Prevention and Control of SARS

Taiwan was removed by the World Health Organization (WHO) from its travel advisory and "area with local transmission" lists on June 17 and July 5, 2003, respectively. Although there was in December of the same year an indigenous laboratory infection, through effective control measures, the infection had not spread. Thus far, there have not been any indigenous infections. Disease prevention and control measures, however, have never been relaxed. Measures are drafted and formulated strictly following the domestic and international epidemic conditions. Some important measures in the prevention and control of SARS (Severe Acute Respiratory Syndrome) are as follows:

1) Nosocomial infection control

On November 1, 2004, a set of Regulations Governing Inspection of Medical Care (Medical) Institutions in Nosocomial Infection Control and Immunization Measures was announced to realize the inspections of nosocomial infection control. Nosocomial infection control teams were organized by region, and 556 district and above hospitals had been inspected. Plans for the supervision by region

Table 5-2 Number of Outbreak and Unknown Cause Investigations in 2004

Type of Investigation	Number
Fever cases	4
Diarrhea	1
Pulmonary tuberculosis	1
Typhoid	1
Hepatitis A	1
Respiratory syndrome	5
Q fever	1
Post-typhoon disaster investigation	1
Total	15

Table 5-1 Cases of Notifiable Diseases, Taiwan Area, 2004

Category	Disease	Cases Reported	Cases Confirmed
I	※Cholera	1	1
	※Plague	0	0
	※Yellow fever	0	0
	※Rabies	0	0
	※Ebola hemorrhagic fever	0	0
	※Anthrax	0	0
	SARS	0	0
II	※Typhus fever	0	0
	※Diphtheria	0	0
	Meningococcal meningitis	38	24
	Typhoid	92	38
	Paratyphoid	72	19
	※Poliomyelitis	0	0
	Bacillary dysentery	232	156
	Amebic dysentery	229	93
	Dengue fever	1，422	427
	※Malaria	18	18
	Measles	36	0
	Acute viral hepatitis A	209	206
	EHEC (Enterohemorrhagic E coli)	8	0
	Enterovirus complicated severe cases	148	49
	※Hantavirus Pulmonary Syndrome	2	2
III	Tuberculosis	19，854	16，784
	Japanese encephalitis	319	32
	※Leprosy	5	5
	Rubella	48	4
	※Congenital rubella syndrome	0	0
	Pertussis	188	20
	Scarlet fever	1，253	748
	Tetanus	16	0
	Scrub typhus	2，015	368
	Acute viral hepatitis B	378	376
	Acute viral hepatitis C	194	194
	Acute viral hepatitis D	10	10
	Acute viral hepatitis E	35	17
	Acute viral unspecified hepatitis	28	0
	Mumps	961	0
	Chickenpox	11，893	0
	Legionnella	1340	102
	Invasive hemophilus infection type b	71	20
	※Syphilis	5，099	5，099
	※Gonorrhea	1，972	1，972
	Influenza complicated severe cases	41	17
Others	※AIDS	235	235
	※HIV infection	1，568	1，568

Note : Data include all cases onset in 2004, analyzed by the Notifiable Communicable Disease Surveillance System

※ Only confirmed cases are included in statistics.

of hospitals in nosocomial infection control were implemented; and a mechanism for calling for counseling by scholars and experts for supervision by region was established.

2) Laboratory diagnosis and pathogenic agent assessment

Various new laboratory technologies had been developed and brought in to shorten laboratory testing time for quick diagnosis. Collaboration with the WHO-collaboration laboratories such as the US Centers for Disease Control and Prevention (US CDC) and the National Infectious Disease Research Institute of Japan was strengthened to bring in new laboratory testing methods and test reagents to confirm the results of testing at the first instant of time. Laboratory testing of 28 cases on the "potency analysis of serum antibodies for one full year in SARS-recovered patients" was completed.

3) Prevention and control of influenza

For the overall considerations of disease control, the 2004 plan for immunization against influenza focused on high-risk groups such as (1) the elderly 65 years and above, inmates of long-term care institutions such as nursing homes and nursing care centers, their employees, and patients of rare diseases; (2) young children 6 months through two years of age; (3) medical and nursing personnel of medical care institutions and disease control personnel; and (4) employees of poultry industries (chickens, ducks, geese, pigs) and animal quarantine personnel. Immunization was extended to other high-risk groups pending on the progress of the program and the availability of vaccines. In total, some 2.5 million doses of vaccines had been procured; of them, 500,000 were for children.

4) Border control

(1) At international ports of entry (including the three small links), all inbound passengers are screened for body temperature; 10,589,159 persons in 2004. 23 sets of Infrared Body Temperature Detector were installed to measure temperature of inbound passengers. Immediate control measures were taken against passengers with a fever. In total, 57 dengue fever cases, 43 bacillary dysentery cases and three malaria cases were detected by this way. Cases of communicable disease detected were handled in accordance with relevant disease control measures to prevent the entry and spread of communicable diseases from abroad.

(2) Beginning April 24, 2004, all passengers who had been to Beijing and Anhui of China within ten days prior to entry were asked to fill in the "Survey Form for Passengers Arriving from Beijing and Anhui (the red slip)". Local health bureaus were instructed to follow-up them by telephone whether they had developed fever. The public were asked to self-manage their health.

(3) On April 26, 2004, an announcement was made to the effect that close contacts of SARS patients should self-manage their health conditions for ten days. When fever developed during the self-management period, they should be placed under house-quarantine for observation (including isolation care in hospital) for three days; this could be extended, when necessary, by the judgment of the health authorities. Passengers arriving from mainland China, Hong Kong, Macau and other SARS raging areas, if developed fever during the health self-management period and the possibility of contracting SARS was not eliminated by physician's diagnosis, should be placed under house-quarantine for three days; this could be extended, when necessary, by the judgment of the health authorities. SARS patients discharged from hospital within ten days after fever disappeared should be placed under house-quarantine for ten days from the day the fever disappeared.

(4) At international ports of entry, the measure of requiring inbound passengers to fill in the "Survey Form for the Control of Communicable Diseases" and the measurement of body temperature had continued. After assessment, on December 1, 2004, the

inbound passengers were no longer required to fill in the "Survey Form for the Control of Communicable Diseases". However, inbound passengers with suspected symptoms of communicable diseases were required to fill in on their own initiative the Survey Form.

(5) The CKS International Airport was subsidized to install PASC X-ray facilities to expedite the detection of SARS cases, to minimize spaces needed for the storing of X-ray films, and to avoid contamination of environment by hazardous wastes in developing X-ray films.

(6) Thirty-four sets of mobile negative-pressure cabins for transporting SARS cases for medical care had been procured and distributed to disease control hospitals and off-shore island health agencies.

5) Medical care by level

Plans were formulated to establish a medical care network for the prevention and control of infectious diseases, and to organize a center for the referral of cases of infectious diseases and allocate of hospital beds.

To prepare for the possible flu pandemic the Center for Disease Control (CDC) has designated, twenty-three hospitals around Taiwan, one in each county basically, as the infectious disease hospitals specially in treatment of inpatients during a pandemic. The SARS experience has demonstrated that enhance the awareness and practices of infection control in hospitals for the safety of health care worker and benefits of patients.

The public are educated again and again to wash hands frequently, to adopt balanced diet, and to measure body temperature. People with fever are discouraged from going to office or school. All these measures are aimed at detecting epidemics earlier in advance to safeguard the health of the population.

3.Prevention and Control of Major Communicable Diseases

■ Communicable Diseases of the Respiratory Tract

1. Prevention and Control of Tuberculosis

Tuberculosis was the 12th leading cause of death in 2003. In 2004, 24,157 cases were reported; by the end of 2004, 12,107 cases were placed under management. Major activities are as follows:

(1) The number of medical care institutions waiving patients of co-payments for the medical care of tuberculosis had been increased from 76 to 277 to improve the accessibility of patients to medical care, to reduce their economic burdens, and thus to remove obstacles to medical care of tuberculosis patients.

(2) The follow-up management of tuberculosis cases was strengthened. The 12-month lost-to-contact rate had dropped, comparing with that of the same period of the previous year, from 24.08% to 16.62% (by 30.95%); the 18-month lost-to-contact rate, comparing with that of the same period of the previous year, had dropped from 8.62% to 4.49% (by 47.86%).

(3) Strengthening public health systems for tuberculosis

A. BCG immunization was enhanced; the coverage rate for infants under one year of age had reached 96.19%.

B. Screening for high-risk groups and residents in areas of high prevalence was strengthened; a total of 367,216 person-times were screened in 2004.

C. Reporting time of medical care institutions was shortened; now on average within two days. Rate of abnormal reporting had dropped to less than 2%.

D. Management of tuberculosis of medical personnel and the aborigines was strengthened. Once a case is reported, the system automatically informs by mobile phone disease control personnel concerned within four seconds.

E. A plan for the improvement of medical payments for tuberculosis patients was implemented. Hospitals established case-management personnel to assist in the management of patients and to remind them for re-visit to clinics, and thus to improve the care rate. In 2004, 284 hospitals participated in this plan; and the

care rate of tuberculosis patients had gone up to 60%.

F. Medical costs for the inpatient care of chronic infectious tuberculosis patients and patients of the mountain townships were subsidized; a total of 284 person-times were subsidized this way.

G. In coordination with the World Tuberculosis Day on the theme of "Preventing Tuberculosis Together; Say Good-Bye to Tuberculosis", health education activities were promoted.

(4) Establishment of a tuberculosis diagnosis and treatment system

Four training courses for physicians on the diagnosis and treatment of tuberculosis were held to train 289 physicians; six advanced courses were organized for 22 physicians; and eight training courses were held to train 1,110 nurses. 91 meetings of the advisory group on the diagnosis and treatment of tuberculosis were held; meetings were also held to review 1,854 cases of difficult tuberculosis cases. A manual, "Guidelines on Nosocomial Infection Control of Tuberculosis", was compiled.

(5) Establishment of a tuberculosis laboratory network

Nineteen quality-certified laboratories under contract were commissioned, through convenient and rapid delivery and reporting system, to test sputum for 23 counties and cities. The sputum-test rate had gone up to 93%. A revised "Tuberculosis Laboratory Testing Manual" was completed.

2) Meningococcal meningitis

In 2004, 38 cases of meningococcal meningitis were reported; of them, 24 were confirmed and three had died, at a fatality rate of 12.50%. Both the confirmation rate and the fatality rate were lower than those of the previous year. Of the confirmed cases in 2004, 58.33% were of B serotype. Distribution of cases by month is shown in Table 5-3.

There has been a trend of increase in the number of cases and fatality rate of meningococcal meningitis in the last twenty years. To improve the quality and effectiveness of control measures against this disease, the Center for Disease Control of the DOH, in addition to routine control measures, has strengthened the following: (1) standardization of

Table 5-3 Distribution of Cases of Meningococcal Meningitis, by Month, Taiwan Area, 2004

Month	No. of Cases				By Serotype					
	No. of Reported Cases	No. of Confirmed Cases	No. of Deaths	Fatality Rate (%)	A	B	C	W135	Y	Uncertain
January	8	6	0	0.00	1	3	0	1	1	0
February	3	3	0	0.00	0	3	0	0	0	0
March	6	5	1	20.00	0	2	0	0	1	2
April	3	2	1	50.00	0	1	0	1	0	0
May	2	1	0	0.00	0	1	0	0	0	0
June	4	4	1	25.00	0	2	0	1	0	1
July	6	0	0	0.00	0	0	0	0	0	0
August	3	1	0	0.00	0	1	0	0	0	0
September	0	0	0	0.00	0	0	0	0	0	0
October	0	0	0	0.00	0	0	0	0	0	0
November	3	2	0	0.00	0	1	0	0	1	0
December	0	0	0	0.00	0	0	0	0	0	0
Total	38	24	3	12.50	1	14	0	3	3	3

control measures, (2) promotion of health education, (3) organization of academic symposiums, and (4) conducting indigenous studies. Thus far, a questionnaire survey of confirmed meningococcal meningitis cases in the period between 2001 and 2003 and preliminary descriptive analysis of the data have been completed. Cross analysis and identification of risk factors will be made.

3) Novel influenza virus infection

Since the outbreak of H5N1 avian flu in Hong Kong in 1997, there have been several reports of outbreaks of H5N1 and H7N7 avian flu in Asia and Europe. The WHO has warned against a possibility of global outbreak, although not knowing when and how. To know in advance the epidemic situations, the Center for Disease Control announced on December 29, 2004, the new type influenza a notifiable disease, the 40th notifiable disease thus far. Some major activities are as follows:

(1) Information systems on surveillance, reporting, disease investigation and self-health management have been installed in advance. They will be activated immediately after announcement.
(2) A national influenza pandemic preparedness plan was formulated. Actions have been taken to stockpile anti-virus medicines, personal protective equipments and develop the technique of flu vaccine manufacture.
(3) Standard operational procedures of all control measures and specifications have been formulated by alert level of influenza pandemic.
(4) Epidemic situations of influenza by level are shown in Table 5-4.

Situation in Taiwan

Since 2003, most Asian countries have been affected by H5N1 high pathogenic avian influenza (HAPI). Vietnam, Indonesia, Thailand, Turkey, China, Cambodia and Iraq have reported more than one hundred human H5N1 cases, with case fatality as high as 50%.

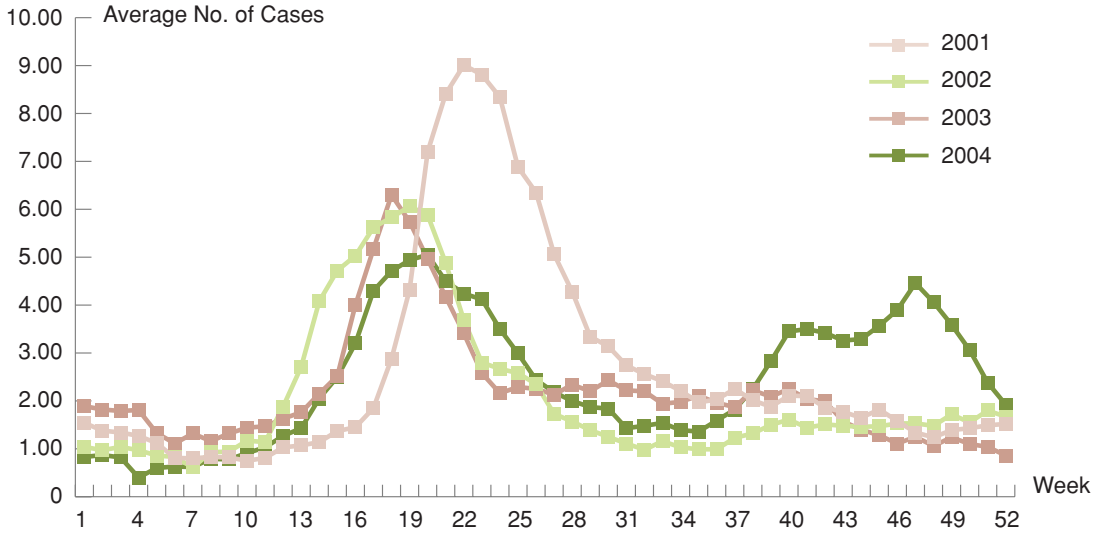
Taiwan's Council of Agriculture conducts flu surveillance on migratory birds, chickens, ducks, geese and pigs. Between December 2003 and March 2004, only H5N2 strain (low pathogenic) was detected. HAPI, however, has never been found in Taiwan.

Taiwan's Center for Disease Control (CDC) has built multiple surveillance systems to detect human avian flu cases and any unusual cluster of influenza-like illness. Furthermore, 12 virology laboratories attached to medical centers have joined the laboratory surveillance system, which offer information about influenza activity. If a patient meets the reported criterion, throat swab and serum have to be taken to examine flu A. If they detect flu A but not H1 or H3 subtype, further tests for H5 and H7 type will be conducted. Following these tests, an antiviral agent will be prescribed for the patient immediately. Aggressive surveillance and case investigation confirm that to date there has been no human avian influenza case in Taiwan.

Table 5-4 Degree of Influenza Epidemics

Degree	Time for Activation
0	H5 or H7 avian flu viruses detected domestically; or confirmed cases of humans infected with high pathogenic avian flu reported abroad. 1. Domestic poultry infected with low pathogenic avian flu; 2. Domestic poultry infected with high pathogenic avian flu.
A1	Confirmed cases of man-to-man transmission of novel influenza reported abroad.
A2	Suspected cases of poultry-to-man infection, imported cases, laboratory infection of novel influenza reported domestically.
B	Confirmed cases of man-to-man infection of novel influenza reported domestically.
C	A large-scale outbreak of man-to-man infection of novel influenza in country.

Figure 5-1 The Average Number of Enterovirous Cases Reported by Sentinel Physicians, Taiwan



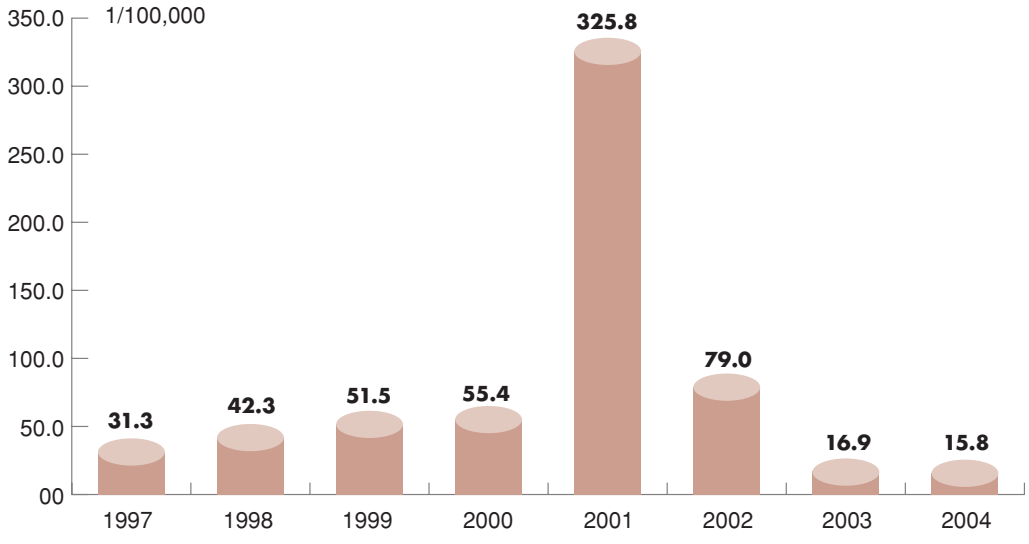
Communicable Diseases of the Intestinal Tract

1) Enterovirus

(1) Enterovirus infections are strictly monitored through the communicable disease reporting system on the monitoring of enterovirus complicated severe cases, the sentinel physician's reporting system on the monitoring of hand-foot-mouth disease and herpangina, and the monitoring system on the inpatient care of enterovirus patients. The average number of enterovirus cases reported by sentinel physicians each year is shown in Figure 5-1.

(2) In the area of health education and promotion, prior to the epidemic seasons of enterovirus, banners are hung in schools and in public places; posters are displayed and leaflets are left at Mass Transportation stations; and mobile campaigns on

Figure 5-2 Incidence rate of Bacillary Dysentery in Mountain Areas (1997 to 2004)



hand-washing are organized on campus in collaboration with enterprises. Four training courses on the "Clinical Diagnosis of Enterovirus Infections and Treatment of Complicated Severe Cases" have been organized. A 2004 Symposium on the Prevention and Control of Enterovirus was held to improve capabilities in prevention and control.

(3) An "Advisory Committee on Clinical Critical Care Consultation" has been set up in each of the northern, central, southern and eastern regions to provide counseling on the medical care of patients. Principles and guidelines on the medical care of enterovirus complicated severe cases have been established to provide the front-line physicians with principles for handling these patients, and thus to reduce the fatality rate of severe cases.

(4) Recommended Criteria for Suspension of Class for Enterovirus were amended to prevent the occurrence of enterovirus complicated severe cases outbreak. A table, Distribution by Township of Enterovirus Type 71 and Severe Enterovirus Cases in the Taiwan Area, was announced for the reference of counties and cities in deciding whether classes should be suspended for enterovirus infections.

(5) The List of Recommended Hospitals for the Referral of Enterovirus Severe Cases was amended to allow medical care institutions more sufficient and adequate information in referring patients for medical care, and the enterovirus complicated severe cases more timely and adequate medical care, and thus to reduce fatality rate and sequelae of the infection.

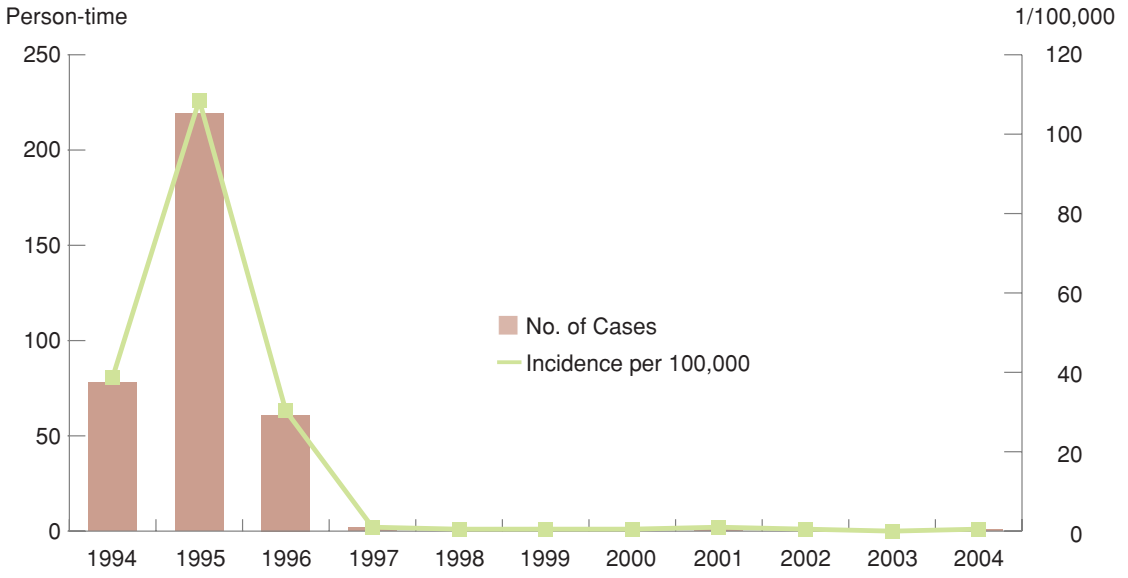
2) Prevention and Control of Bacillary Dysentery in Mountain Townships

The Plan to Strengthen Prevention and Control of Bacillary Dysentery in Mountain Townships was continued. In 2004, in the mountain townships of the nine priority counties and cities, 36 cases had been detected; the total cases of bacillary dysentery in these townships had dropped by 84%, as compared with the average 223 cases per year of the previous five years. Of them, remarkably, no cases were found in Haijuei, Dajen, Lanyu, Jenai, Fuhsing and Wufeng townships. The prevalence per 100,000 population in all mountain townships in the period between 1997 and 2004, as shown in Figure 5-2, indicates that bacillary dysentery in the mountain townships has been brought under effective control.

3) Hepatitis A

To provide young children aged 2 and older in 39 towns of 12 counties/cities (including 30 mountain regions and 9 areas that are near by the mountain

Figure 5-3 Incidence Rate of Acute Viral Hepatitis A in Mountain Areas (1994 to 2004)



regions) with free hepatitis A vaccination. Incidence of hepatitis A in mountain townships had dropped sharply from 108.59 per 100,000 in 1995 to only 0.50 in 2004 (see Figure 5-3).

In addition, the mini-Three Links with China, which have greatly increased personal contacts and commercial exchanges between the two sides of the Taiwan Strait, might lead to the importation of hepatitis A virus from China and threaten the health of children in Taiwan. Therefore, free hepatitis A vaccination is being carried out for children aged 2 and older in Chinmen and Matsu regions.

In light of the possibility of hepatitis A infection through blood transfusion, the Department of Health offers free hepatitis A vaccination to Hemophilia patients who do not have hepatitis A antibodies. This project was implemented on December 15, 2004, and is expected to run till the end of 2005. The administration was made possible through the help of the Hemophilia Association of Taiwan, which conducted a survey to name 18 hospitals regularly visited by the patients as partner hospitals for the program.

■ Vector-borne Communicable Diseases

1) Dengue Fever

In 2004, there were a total of 427 confirmed cases of dengue fever, with no deaths. Of them, 91 were imported (2 dengue hemorrhagic fever cases); and 336 were indigenous (5 dengue hemorrhagic fever cases). Distribution by week of confirmed indigenous dengue fever cases in 2004 is shown in Figure 5-4.

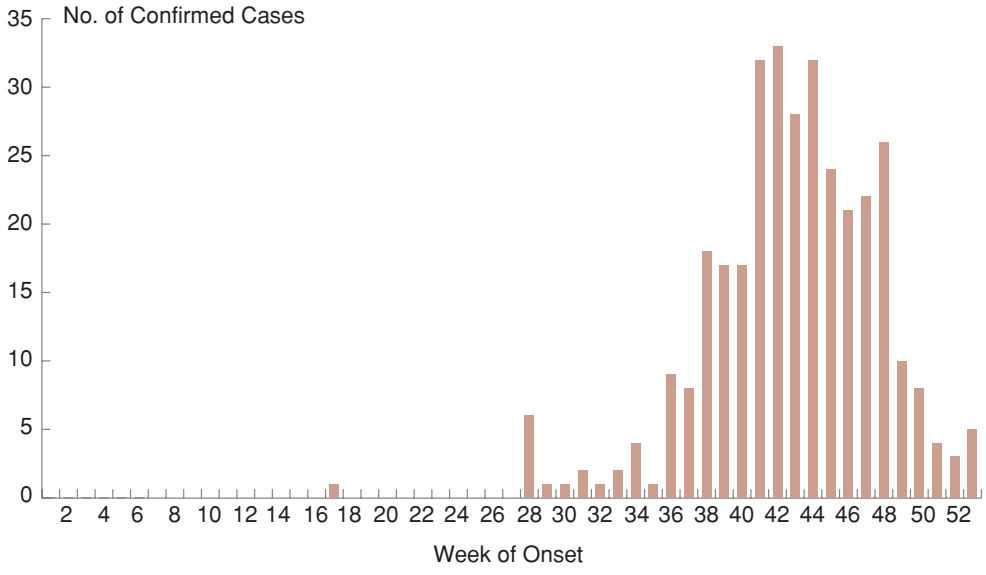
For the prevention and control of dengue fever, the Four-year Plan to Eliminate Breeding Sources of Vector Mosquitoes and Interrupt the Transmission of Dengue Fever began in 2004. Major activities are:

(1) Primary prevention (elimination of breeding sources to control vector mosquitoes)

1. Promotion of health education: educational materials for different groups have been developed and produced for distribution through various channels to educate the public on the prevention and control of dengue fever.
2. Overall elimination of breeding sources: a mobilization mechanism was established. The mechanism includes the holding of coordination meetings of health and environmental protection organizations, establishment of county/city and township level dengue fever control centers, subsidizing private organizations in high-risk counties and cities to promote community health building activities, revising the Dengue Fever Control Manual, and strengthening training of disease control personnel.

(2) Secondary prevention (establishing an effective

Figure 5-4 Distribution of Onset of Confirmed Indigenous Dengue Fever Cases, 2004



monitoring mechanism)

1. Local governments are supervised to conduct epidemiological investigations of suspected cases, to conduct emergency spraying of pesticide, to remove breeding sources, and to implement health education programs.
2. Surveillance of passengers from Southeast Asia has been strengthened. Inbound passengers with abnormal body temperature are screened for dengue fever.
3. A mechanism for the surveillance of breeding sources, larva and vector mosquitoes is set up to monitor viruses in vector mosquitoes, and to conduct research on drug-resistance of vector mosquitoes.

(3) Tertiary prevention

1. Training of medical personnel is strengthened to improve the quality of medical care of dengue hemorrhagic fever patients.
2. Through international cooperation channels, medical and disease control personnel are sent abroad for advanced training and experience-sharing.

2) Prevention and Control of Malaria

In 2004, a total of 33 cases of malaria were reported; of them, 18 were confirmed, all imported. Three of them were detected by the quarantine officials at international airport while performing screening measures. Three recurrent cases of tertian malaria were detected at the same time.

To maintain the achievements of malaria eradication, malaria surveillance was continued, and control work was intensified against imported cases to avoid outbreaks of the disease. Health education was also strengthened and travelers going abroad were reminded to avoid being bitten by mosquitoes.

3) Prevention and Control of Typhus Fever

Taiwan has not reported a single confirmed case of typhus fever since the end of the War; all cases tested positive for typhus fever have been local typhus fever. For effective prevention, surveillance has been intensified and health education of the public has been strengthened to familiarize them with the disease.

4) Prevention and Control of Scrub Typhus

Surveillance of the disease and health education of the public has been continued.

5) Japanese Encephalitis

Japanese encephalitis continues to be an indigenous disease of Taiwan, prevailing between May and October with peaks falling in June and July. There are 300 to 400 reported cases each year, but only 10 to 30 are confirmed. In 2004, there were 319 reported cases and 32 were confirmed. By age, the eldest patient was 73 years, and the youngest one was 19 years. The average age of patients was 42.1 years, with more cases in the 31-60 age groups. Onset of the confirmed cases concentrated in the period from May to August. Of the 32 confirmed cases, two had died of meningitis, arrhythmia, cardiac failure, septicemia and hypertension. In the confirmed cases, 27 had developed fever, 16 were unconscious, and several had symptoms of vomiting and diarrhea. The breeding of vector mosquitoes was primarily associated with the living environment. Of the patients, 13 lived close to pig-raising households; 11 lived close to paddy fields; 12 lived near pigeon scoops; six lived near fish ponds; nine lived close to poultry farms; and nine kept pets (dogs, cats) at home. Four other patients, however, lived in places without pig-raising households, pigeon scoops or paddy field around.

■ Prevention and Control of Sexually-Transmitted Diseases and Sanitary Management of Business Establishments

1) Prevention and Control of STDs

The Department launched on a pilot basis in November 2003 a Plan for the Monitoring and Reporting of STDs by Sentinel Physicians and HIV Examination for STD Patients, in collaboration with physicians in gynecology and obstetrics, dermatology, family medicine, urology and infectious diseases in counties and cities; 242 medical care institutions in total involving 414 sentinel physicians. Monitoring focused on STD out-patients with a view

to establish an STD symptom reporting and HIV specimen delivery system. A manual on the treatment of STDs was compiled and training courses were organized to upgrade the standard of treatment.

2) Sanitary Management of Business Establishments

In 2004, there were a total of 24,839 business establishments of public health implications. They were, 3,471 hotels, 18,454 barber shops and beauty salons, 361 bath houses, 1,492 entertainment joints, 772 swimming pools, 162 cinemas, and 127 massage parlors. In accordance with regulations of the guidelines on the supervision of businesses and the administration autonomy statutes, local health bureaus had inspected 56,582 times of these establishments; of them, 8,139 were ordered to improvement. 305 workshops had been organized.

Blood-Transmitted Communicable Diseases

1) Prevention and Control of AIDS

Since the detection of the first AIDS case in Taiwan in 1984 (a foreigner in transit), by the end of 2004, there had been a cumulated total of 7,256 reported cases of HIV infection (including 494 foreigners). Of the indigenous cases, 1,800 had developed into full-blown AIDS; of them, 1,025 had died.

To strengthen the control, a Plan for AIDS Prevention and treatment began in 1994. The Plan is now in the third five-year plan stage. Focuses of the Plan include the strengthening of medical care, extension of control systems, improvement of disease surveillance systems, improvement of the quality of laboratory services, improving the blood supply safety, strengthening of health education, strengthening of the prevention and control of STDs, training and development of professional manpower, and science and technology development. The Committee for the Promotion of AIDS Control originally set up by the Executive Yuan in December 2001 was reorganized in December 2004 into the interdepartmental Committee for the Prevention and Control of AIDS of the Department of Health, the Executive Yuan, with the Minister of Health as the chairperson. Efforts are continued to coordinate the twelve ministries and councils concerned and non-governmental organizations to promote the control plan with a view to reduce the number of HIV infections and realize the control efforts.

For the medical care of patients, there are throughout the country 30 designated AIDS hospitals for free medical care using the Highly Active Anti-Retroviral Therapy (HAART). To strengthen the screening of high-risk groups and special groups, ten designated hospitals including the National Taiwan University Hospital have been asked to conduct free anonymous screening for HIV infection. 4,610 persons have accepted this screening service.

The Halfway Home operated by the Taipei AIDS Education Foundation under contract with the Department provides life care and hospice care for AIDS patients at their terminal stage, and respite services for family members. It also provides services in the temporary settlement of patients after discharge. The Foundation has 11 beds and has served more than 118 person-times. The Taiwan House of Loving Care has also been subsidized to accept and care for AIDS patients. Thus far, service has been rendered for 230 person-times.

In coordination with the UN's AIDS Day theme, "Women, Girls, HIV and AIDS", the Department, together with local health bureaus and non-governmental organizations, launched a series of campaigns, "With Condom or Without Sex", to enhance the public's awareness of "women and AIDS", to establish in women the concept of self-protection for health, and to call for men to be more considerate and responsible to women. Together, the public is urged, we shall actively fight against AIDS.

2) Hepatitis B and C

On October 1, 2003, the Department launched the "Trial Program for Enhanced Hepatitis B and C Treatment Program under the National Health Insurance Scheme". In the period between October 2003 and December 2004, treatment had been given to 9,114 and 5,251 hepatitis B and hepatitis C patients, respectively. In 2004, some NT$ 2.08 billion had been appropriated as subsidies for medi-

cines.

Prenatal examination of pregnant women for hepatitis B and immunization of the newborns against hepatitis B are continued. Make-up immunization of hepatitis B for pre-school children and primary school students upon enrollment are also conducted. Of children born in 2003, their immunization rates for the second and the third doses of hepatitis B were 97.1% and 95.1%, respectively.

To improve the quality of laboratory testing for hepatitis, hepatitis B testing quality validation was carried out in hospitals designated for the health examination of alien laborers and also in laboratories of county and city health bureaus. The consistency of accuracy of testing for hepatitis B surface antigen (HBsAg) and e-antigen(HBeAg) by health bureaus reached 100%; that of the hospitals designated for the health examination of alien laborers was 98%.

A 30-second film, "Hepatitis Control for Couples", has been produced to educate the public on the prevention and control of hepatitis B and C. Another film, "Control of Hepatitis B and C for School Children", focuses on the dangers of tattooing, and body and ear piercing in a mood more acceptable to the youngsters. These films are shown on TVs. Several posters and leaflets on the prevention and control of hepatitis B and C have also been produced for distribution to health bureaus, education departments and other institutions concerned. More communication channels have been utilized for health education.

■ Prevention and Control of Leprosy

In 2004, five new indigenous cases of leprosy had been detected. By the end of the year, 58 patients were under management. Cases of leprosy have declined year by year; the importance of imported cases has become more obvious. To prevent the entry of leprosy cases, examination for leprosy has been made one of the health examination items for aliens in the Regulations Governing Management of the Health Examination of Employed Aliens. Patients are deported immediately in accordance with regulations once detected.

4. Quarantine

1) Quarantine at Ports

To prevent the entry of communicable diseases into Taiwan, quarantine is mandatory for vessels, aircraft, crew and passengers, and fishery products. Immunization is carried out against major communicable diseases, cholera, yellow fever, meningococcal meningitis, adult-type tetanus and reduced diphtheria toxoid. In addition, a joint supervisory team on communicable diseases at international ports has been organized by the branch bureau of the Center for Disease Control together with harbor and airport authorities, police departments and customs authorities to regularly inspect and eliminate breeding sources of vectors for the control of vectors. In coordination with the amendment of the Regulations Governing Quarantine at Ports, the quarantine of imported fishery products for cholera was terminated on August 12, 2004. *Vibrio cholerae* is now listed as a pathogenic agent of food poisoning. For quarantine of inbound vessels and aircraft and imported fishery products, see Tables 5-5 and 5-6.

2) Management of Alien Labor

Alien laborers are required of health examination prior to entry, within three days after entry, and within thirty days before and after six months, 18 months and 30 months of employment. Items for health examination are, chest x-ray examination, HIV antibody examination, serological test for syphilis, hepatitis B surface antigen testing, fecal examination for intestinal parasites, pregnancy test, general physical examination (including mental status), and leprosy examination. Pregnancy test and hepatitis B surface antigen testing are waived for the health examinations six months, 18 months and 30 months after employment. Aliens failing in any one item of the examination are not permitted for entry; those who have already entered, with the exception of intestinal parasites (except amebic dysentery) that are given thirty days for treatment and re-examination, are deported. Failure rate of health examination for aliens is the highest for parasites. In coordination with the Employment Service Act, two sets of regu-

lations Regulations Governing Management of the Health Examination of Employed Aliens. Regulations Governing the Designation and Management of Hospitals for the Health Examination of Employed Aliens after Entry, have been formulated.

3) Prevention and Control of Travel-Associated Communicable Diseases

During the period between January and November 2004, all inbound passengers were required to fill in the "Survey Form for the Control of Communicable Diseases" for the early detection and treatment of communicable diseases. This measure was terminated on December 1, 2004, to be replaced by filling out the Survey Form for the Control of Communicable Diseases by passengers with symptoms. To alert passengers to travel-associated communicable diseases, the Center for Disease

Table 5-5 Quarantine Statistics at International Harbors, 2004

Quarantine Authority	No. of Inbound Ships	No. of ship Passengers	No. of Passenger Flights	No. of Air Passengers	No. of Cargo Flights	Tons of Air Cargo
1st Branch Office (Keelung Harbor)	9,286	56,175				
1st Branch Office (Suao Harbor)	934	0				
1st Branch Office (Shuitou Harbor of Kinmen)	2,163	230,395				
1st Branch Office (Fuwuo Harbor of Matsu)	997	21,015				
2st Branch Office (CKS Airport)			59,303	8,140,362	15,243	4,609,713
3st Branch Office (Taichung Harbor)	4,355	563	16	1,428		
4st Branch Office (Kaohsiung Harbor)	13,530	1,771				
5st Branch Office (Kaohsiung International Airport)			12,701	1,621,243	645	222,192
6st Branch Office (Hualien Harbor)	414	0	13	1,062		
Total	31,679	309,919	72,033	9,764,095	15,888	4,831,905

Table 5-6 Quarantine Statistics on Imported Fishery Products, 2004

Quarantine Authority	No. of Shipments	Weight (tons)	Non-toxic(shipments)	Toxic(shipments)
1st Branch Office (Keelung Harbor)	1,077	18,600	0	0
1st Branch Office (Suao Harbor)	1	2	0	0
2st Branch Office (CKS Airport)	15,462	15,653	0	0
3st Branch Office (Taichung Harbor)	39	703	0	0
4st Branch Office (Kaohsiung Harbor)	1,569	60,330	0	0
5st Branch Office (Kaohsiung International Airport)	1,714	1,128	0	0
6st Branch Office (Hualien Harbor)	0	0	0	0
Total	19,862	96,416	0	0

*In coordination with the amendment of the "Regulations Governing Quarantine at Ports", quarantine against Vibrio cholerae is terminated since August 12, 2004.

Control has produced and distributed at international airports leaflets such as, Health Promotion on Traveling Abroad, and Avian Flu. Health education is given to outbound passengers. A special zone on the Website of the Center is allocated for travel-associated disease prevention to provide the public with information related to travel-associated communicable diseases.

Figure 5-5 Immunization coverage (2001,2002 Birth Cohort)

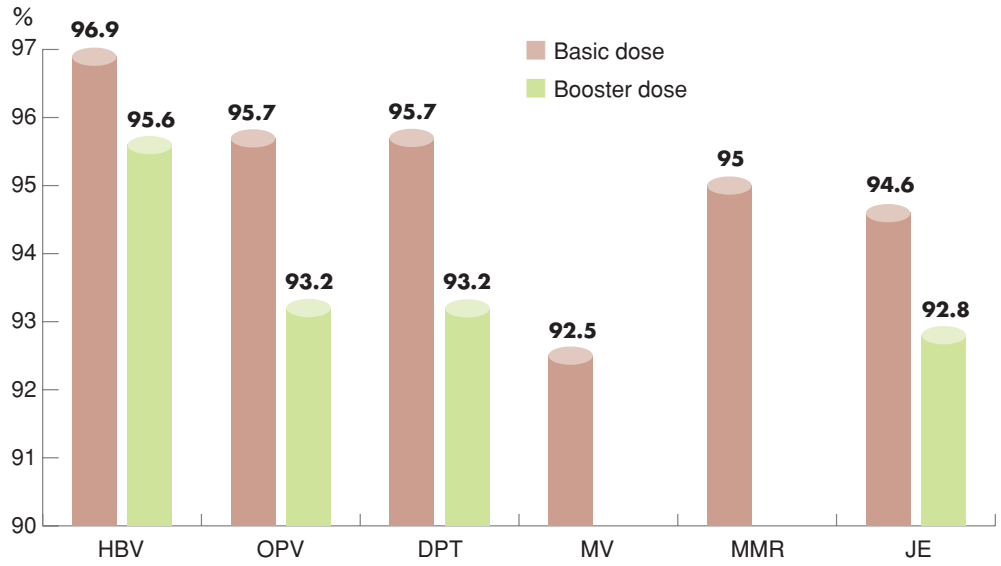
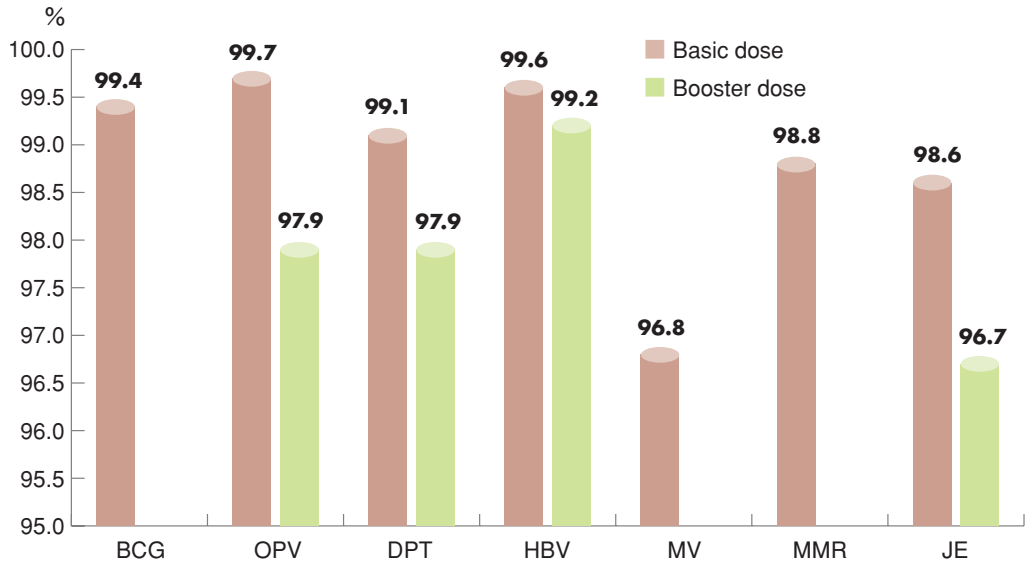


Figure 5-6 Immunization Coverage among of Primary School Entrants



5. Immunization

1) Vaccine-Preventable Diseases

By the end of December 2004, a total of 14,527 suspected cases had been reported. Of them, there were 48 cases of rubella (four confirmed), 36 cases of measles (none confirmed), 63 cases of acute flaccid paralysis (56 confirmed), and no cases of congenital rubella syndrome and neonatal tetanus. Adequate control measures have been taken.

2) Immunization

The routine immunization program for infants and young children has offered free by the government to control outbreaks of communicable diseases (Table 5-7). In addition, varicella vaccine has been given to children born after January 2003 and aged 12 months or older as one of the routine immunization program for infants and young children since 2004, to prevent the transmission of chickenpox and its likely serious complications. The immunization coverage rate of infants and young children are shown in Figure 5-5. Pre-school children and primary school children upon enrollment are checked for their immunization records and make-up vaccination is given to improve the immunization coverage rates (see Figure 5-6). Since this year, one dose of MMR to the first grade students of primary school has been given as a routine practice to protect them from infection.

To prevent influenza and for overall consideration of disease control, in 2004, influenza immunization plan was made available to: (1) the elderly 65 years and above, inmates of long-term care institutions such as nursing homes and nursing care centers, their care-givers, and patients of rare diseases; (2) young children aged six months through two years; (3) medical and nursing personnel of medical care institutions and disease control personnel; and (4) high-risk groups such as workers of poultry farming-related industries (chickens, ducks, geese, pigs) and animal quarantine personnel. Some 2.5 million doses of vaccines have been procured. The immunization coverage rates of the above-mentioned groups are: 88.1% for medical and nursing personnel and disease control personnel; 59.2% for the elderly 65 and above; for children less than two years, 59.1% for the first dose, and 77.9% for the second dose; and 57.1% for employees of poultry farming-related industries.

6.Laboratory Testing and Research

1) Routine Testing
   1. A total of 135,439 testing for notifiable diseases have been carried out.
   2. 150 specimens had been tested during the winter fever-screening project period.
   3. 1,062 cases have been tested for pneumonia of unknown causes.
2) In 2004, 24 research projects had been conducted by the Center itself; and 22 had been commissioned out.
3) The Center has actively participated in activities of the WHO Laboratory in Melbourne, Australia, the external quality monitoring of laboratory testing for disease control activities of the US Centers for Disease Control and Prevention and the American Pathology Association. In addition to exhibiting the capability of laboratory testing, the Center has also established a quality management system of laboratories for disease control, including a manual on the quality of laboratory testing for disease control, operational procedures for quality assurance, standard operational procedures of laboratory testing for disease control, operational manual on specimen collection for laboratory testing, operational manual on pathological autopsy of deaths from communicable diseases or unknown causes, a disease prevention capability testing plan, and the establishment of other laboratory-related internal quality documents.
4) The existing testing for pathogenic agents of various communicable diseases has been continued. In 2004, standard testing procedures for special pathogens including pathogenic fungi, chlamydia and mycoplasma, and a differential testing system for pathogenic amebic dysentery had been completed. In addition, a survey on the prevalence and distribution of Peking strain tuberculosis bacilli in the Taiwan Area, and a follow-up survey

and laboratory testing of dysentery bacilli infection in Chienshih Township of Hsinchu County have been completed. Testing capability for legionnella infections has been greatly upgraded; and surveys and research on the follow-up of pathogens have been strengthened. In the future, more will be done to improve testing for emerging infectious diseases and cases reported by sentinel

Table 5-7 Routine Immunization Schedule

Age of immunization	Type of Vaccine	No. of Dose
Within 24 hours of delivery	Hepatitis B immunoglobulin	Single dose
After 24 hours following delivery	BCG	1st dose
Three to five days after delivery	Hepatitis B Vaccine	1st dose
One month	Hepatitis B Vaccine	2nd dose
Two month	Diphtheria, Tetanus, Pertussis	1st dose
	Oral polio vaccine	1st dose
Four months	DPT vaccine	2nd dose
	Oral polio vaccine	2nd dose
Six months	Hepatitis B Vaccine	3rd dose
	DPT vaccine	3rd dose
	Oral polio vaccine	3rd dose
Nine months	Measles vaccine	Single dose
12 months		Single dose
15 months	Measles, mumps, Rubella vaccine	Single dose
	Japanese encephalitis vaccine (March-May)	1st dose
	Japanese encephalitis vaccine (March-May)	2nd dose after two weeks
18 months	DPT vaccine Oral polio vaccine	Booster Booster
Two years and three months	Japanese encephalitis vaccine (March-May)	3rd dose
First year of primary school	Combined tetanus	Booster
	and reduced diphtheria toxoid Oral polio vaccine	Booster
	Japanese encephalitis (March-May)	Booster
	BGC scar examination (those with no scars and tested negative will be vaccinated.)	

physicians, and to bring in and develop rapid molecular laboratory testing and epidemiological typing methods to improve skills in the testing of emerging infectious diseases and related studies.

5) Assistance has been rendered to the implementation of the Plan for the Establishment of a Gene Databank for Indigenous Pathogenic Agents, a sub-project of the national genome medicine research project, and to integrate gene and epidemiological information of some major pathogenic agents. In 2004, work had been done in: (1) successfully establishing a gene sequencing laboratory to reduce costs in sequencing and also for the development of professional manpower; providing Laboratory of the Center and laboratories under contract with gene sequencing services; sequencing results are compiled each week and presented at the Center's staff meeting, and also e-mailed to laboratories under contract; (2) establishing and maintaining gene databanks for enterovirus, influenza virus, dengue fever virus and tuberculosis bacillus; in 2004, databanks for Japanese encephalitis, AIDS, adenovirus and rotavirus had been established; these databanks focus primarily on the gene sequencing of certain specific sections of these viruses, epidemiological information of relevant cases, and data analysis models; (3) improving structures of the databank systems.
6) In addition to the establishment of databanks, action has also been taken to complete the gene sequencing of SARS virus to establish molecular epidemiology information of SARS virus.
   1. By way of the communicable disease reporting system, an epidemiological information databank for scarlet fever has been completed.
   2. Molecular biology technology such as PFGE and various databanks are used.
   3. Standard electronic micrographs for various pathogenic agents have been established for future reference.
   4. The pertussis strains collected in the years are compared with PFGE.
   5. A molecular laboratory testing system and standard operational procedures have been established for blood stage of malaria; findings are compared and assessed with findings from the conventional microscopic testing.
   6. PCR method is used to differentiate *Campylobacter*; a rapid molecular diagnosis PCR system has been established.
   7. A rapid molecular diagnosis PCR system for *Brucella abortus* has been established.
   8. An epidemiological molecular typing system for pathogenic fungi has been established.
   9. A rapid molecular diagnosis PCR system for *Mycoplasma pneumonia* has been established.
   10. Molecular laboratory testing systems and standard operational procedures have been established, and compared and assessed with conventional laboratory testing methods.
   11. Rapid molecular laboratory testing systems and standard operational procedures have been established for adenovirus, RSV and HSV.
   12. A rapid typing and laboratory testing method for enterovirus has been established; antibodies for entervirus have been produced.
   13. Testing methods for rotavirus, norovirus and astrovirus have been established.
   14. The screening capability of medical laboratories for HIV-1 has been upgraded to meet the need of the overall screening of pregnant women.
   15. The Detuned assay method is used to accurately project the annual increase rate of HIV-1 in Taiwan.
   16. Monitoring of the quality of treatment of hepatitis B and C has been strengthened.
7) Control of supplies: When the SARS epidemic broke out in Taiwan in 2003, the outbreak produced drastic impacts on the medical care system, the public health system, the disease control system, community mobilization, and the knowledge of the public on the disease; it also made the demands for disease control supplies increase sharply, to produce chaos in information and an imbalance in demand and supply; and as a consequence, panic and complaints were rampant among the people. To avoid any interruption in the supply of disease control materials in future

Table 5-8 National Inventory of Disease Control Supplies

Stocked at / Mobilization	Hospitals	Health Bureaus	Central	Total	Day of Use under B-level
N95	208.1	95.2	91.3	394.6	113
Protection Robes	168.1	46.7	276.9	491.8	328
Regular Masks	812.6	530.8	889.9	2233.3	45

Source : MIS January 17, 2005.

outbreaks of communicable diseases, the Center for Disease Control of the Department, taking into consideration the requirement for disease control supplies in the past outbreak and findings of surveys conducted later, has estimated the supply requirements by level, and established safety reserves. A system for the management of disease control supplies has been set up to effectively control the manufacturing, sales and stocking of supplies. Supplies currently in stock are shown in Table 5-9.

1. In coordination with the amendment of the Communicable Disease Control Act, two sets of regulations, Regulations Governing Requisition of Disease Control Supplies and their Compensation, and Regulations Governing Management System for Disease Control Resources, have been announced.
2. The Management Information System for Disease Control Supplies has been established, revised and functions expanded. In addition to the originally established Management System for Disease Control Supplies, in March, May and June, 2004, more sub-systems on the management of Tamiflu, antivenins, and management of pharmaceutical materials were added.
3. The storage of supplies in responsibility hospitals and health bureaus has been inspected. In January and February 2004, inspections were made on the storage of disease control supplies in SARS responsibility hospitals and health bureaus to understand their quantities and storage environment.
4. Disease control supplies to Vietnam and the presidential election: On March 8 through 10, to prevent sudden outbreak of SARS during the election of the 11th President and Vice President of the Republic, 712,000 pieces of masks were sent to all county and city election committees for distribution to poll stations. To assist Vietnam in the control of avian flu, on March 11, 20,000 sets of N95 masks, protection robes, gloves and shoe covers were dispatched by air through diplomatic bags to Hanoi and Ho Chi Minh City.
5. A contract for the joint procurement of supplies for simulative stocks has been drafted. In 2004, contracts for the procurement of masks, ear thermometers and plugs, PAPR and other relevant materials for simulative stocks were completed. Contracts on the flow of specific materials and their deliveries, and contracts for the management of disease control supplies have also been prepared to assist in the control of supplies.
6. Sand table drills by region on the control of disease control supplies have been held. On September 3, 2004, through video communication, sand table drills on the control of disease control supplies were held simultaneously in the northern, central, southern and eastern regions to test the understanding of local health bureaus on the reserves of disease control supplies in medical care institutions in their jurisdiction, their capabilities to meet emergencies, and their familiarity with the Management Information System for Disease Control Supplies.
7. Meetings on supply affairs have been held. On November 3 and 4, 2004, a meeting was organized in a hotel in Ilan by the North Branch

Bureau and the Ilan County Health Bureau with participation of supply management personnel of county and city health bureaus and representatives of relevant ministries and councils to discuss matters concerning supplies.

7.Development and Production of Vaccines and biologics

1. Manufacturing, Testing and Development of Biological Products

1) Completing the manufacturing of 391,200 doses of freeze-dried BCG, 32,253 doses of cholera vaccine, 537,916 doses of absorbed tetanus and diphtheria toxoid for adult (Td), 36,468 doses of absorbed diphtheria and tetanus toxoid (DT), 550,840 doses of alum-precipitated tetanus toxoid, 1,181 doses of lyophized bivalent antivenin of Tr.Mucrosquamatus and Tr.gramineus, and 2,140 doses of tetanus antitoxin.
2) Application for registration and market approval for antivenin of daborla ruseilli siamensis has been submitted. One batch of serological products has been manufactured and their efficacy tested. Validation report on the relevant production process and stability test plans has been formulated.
   1. Application for permit license for 398 doses of the antivenin of daborla ruseilli siamensis has been made.
   2. In the clinical trials of the antivenin of daborla ruseilli siamensis, seven cases were treated in 2004, at a cure rate of 100%.
   3. An award for good services in the supply and manufacturing of orphan drugs and research and development has been bestowed by the Department of Health.
3) The third stage cGMP effectiveness-validation for of computers for instraments of insepecting and re-packing computers has been completed.
4) Completing testing for 22 batches of biological products, 16 batches of raw fluid materials, 862 batches of raw materials, and 35 batches of materials.

2. Collaboration with the NHRI in the Manufacturing Techniques of Biological Products

In coordination with the national disease control policies, the production of biological products such as anti-serum products and BCG will be transferred to the National Health Research Institutes beginning in 2009. Staff of the Vaccine Center of the NHRI has taken training in quality assurance, examination and manufacturing techniques; three in manufacturing section, three in examination, totaling six in 2004.

3. Plan for the Self-Manufacturing of Flu Vaccines

The Executive Yuan agreed in principle on November 29, 2004, the planning for the Plan for the Self-Manufacturing of Flu Vaccines. A Committee for the Promotion of the Self-Manufacturing of Flu Vaccines has been set up.

4. Research and Development in Biological Products

1) Enterovirus 71 Vaccines
   1. Preparation for the IgY antibody against enterovirus 71 has been completed. Their feasibility of using in the manufacturing and testing system is analyzed.
   2. Standard enterovirus products have been produced using Ultra centrifugation and gel chromatography.
   3. Preliminary operational conditions of buffers for the purification of virus by ion exchange have been established.
   4. Production of viruses is continued to improve the process of manufacturing.
2) Production of anti IgY antibodies of cobra by eggs.
   1. Tests on dosage of basic immune antigen and immunological methods have been completed.
   2. Relations between antibody dosage and bioactivity have been re-confirmed to reach the effective dosage tests of productive titer.
   3. Systems for the mass extraction and purification of anti-cobra IgY antibodies have been completed.
   4. The dilution factor for the ELISA testing system

has been established.

5. Testing for the antibody response of the duck immunized with detoxified cobra venom has been completed.

3) Completing report on the safety testing of cell-culture derived Japanese encephalitis vaccine.

5. Authorization of the Production Technology of Biological Products

The third year contract on the technology transfer authorization for three biological products, BCG, Td and DT has been signed. The second-stage training of technicians for the production of diphtheria is ongoing. The Kuo Kuang Corporation has successfully produced the fourth batch of diphtheria raw fluid materials meeting the testing of potency.

VI. Healthcare Services and Health Promotion

VI. Healthcare Services and Health Promotion

A healthy population is part of the national competitiveness; it is also an important promoting power for the sustainable development of a nation. Along with the drastic changes in lifestyles and population structure in Taiwan in the recent years, the proportion of the aged population is growing sharply, and health problems of the population have shifted from acute communicable diseases to chronic diseases. It is hoped that by way of the healthcare services and health promotion-oriented public health strategies of primary and secondary prevention, a healthy life can be planned and built, awareness of the self-health management can be increased, and thus to construct a healthy lifestyle of the population. In coordination with the early screening and adequate treatment, the occurrence of chronic diseases and their complications can be reduced to further reduce rates of sickness, disability and death, and to promote the health for all and the quality of life. Major activities in healthcare services and health promotion for the year 2004 are given as follows.

1.Health Promotion for Women and Children and Genetic Health

1 Genetic Health

Congenital anomalies are the second leading cause of death of the newborns and infants. In accordance with the Genetic Health Act, services such as premarital health examination, genetic counseling, prenatal genetic diagnosis, screening of the newborns and genetic counseling are promoted. In 2004, 99% of the newborns, or 216,317 of them, had been screened for congenital metabolic disorders, to detect in them 1,785 anomalous cases. In the same year, 20,936 pregnant women had been given prenatal genetic diagnosis; and 78% of those above the age of 34 years had accepted amniocentesis. 12,929 cases of individuals of suspected genetic diseases in themselves or in families had undergone further genetic examination. Eleven genetic-health counseling centers, twenty-six clinical cytogenesis laboratories and seven clinical genetic laboratories had been certified.

2. Care of Spouses of Foreign Origins and their Children

In 1998, 13,904 children were born to spouses of foreign origins (including those of mainland China, Hong Kong and Macau), accounting for 5.12% of the total number of births. In 2004, this figure went up to 30,142 children, accounting for 13.93% of the total. In other words, for every 7.5 children born, one is born to spouse of foreign origin (including those from mainland China, Hong Kong and Macau). To provide them with reproductive healthcare services, a health-card management system at the primary level has been established. In 2004, cards had been established for 97.37% of those spouses. The newborns born to spouses of foreign origins and the mainland China that were accepted for management were 5,426 (54.39% of those registered) and 2,969 (57.09% of those registered), respectively; they were included for follow-up management. Children are also screened for retarded development. In 2004, 44,003 children of 0-3 years born to spouses of foreign origins and the mainland China had been screened; of them, 294 were suspected abnormal, 288 were reported and referred, and 120 confirmed.

A booklet, Child Care and Health Promotion Manual, in Vietnamese, Thai, Indonesian, English and Cambodian languages has been developed for the use of spouses of foreign origins and health workers. In Yunlin and Hsinchu counties, a project to recruit and train volunteers of foreign origins to

help staffs of the health stations is going on. They can communicate with their fellow country people in their own language and thus facilitate communication.

3. Health Promotion for Pregnant Women, Infants and Young Children

To create a more mother-friendly environment for child delivery, a pilot project, "Operational Standards on Humanitarian Child Delivery", was commissioned out. The project focused on delivery plan, development of health education materials on care during the process of child delivery (for medical-nursing personnel, and for the general public), and a manual on the practice of mother-friendly delivery. A recording system for epileptic pregnant women has been set up and health education given to them. The Health Manual for Pregnant Women has been revised to give women more information about pregnancy and also for keeping record of the process of pregnancy.

An overall effort has been made to establish an obstacle-free breast-feeding environment, including subsidizing and encouraging private sector organizations, companies and business establishments to set up breastfeeding (collecting) rooms, promoting certification of baby-friendly medical care institutions, recruitment and training of breastfeeding community volunteers, establishing supporting groups, and building breastfeeding friendly environment at work sites.

The use of stool identification card for the screening of infants with Cholestasis and the referral and follow-up of abnormal cases has been promoted. In 2004, through the screening, 27 cases of bile tract obstruction had been detected. To continue the care and follow-up of premature babies after discharge from hospital, databanks on premature babies and follow-up and referral procedures have been set up in four medical centers and 19 district hospitals. A working manual on the follow-up examination of premature babies, a manual on home visiting, and another manual for parents of premature babies have also been developed. To understand the growth curve of children, a study to measure physical structures of children 0-6 years has been conducted. Work will be done to amend the existing regulations concerning preventive healthcare for children to increase the number of free health examination from six to nine. The children's health manual has been revised to include more information on healthcare, preventive healthcare services, and immunization. Training of professional workers in the screening of children of retarded development has been strengthened. In 2004, subsidies were made available to support eight such training courses for 604 participants. Screening of children of retarded development in remote areas has been intensified. The Chinese Association of Early Untervention Program for Children with Developmental Disability was entrusted to conduct screening of infants and young children, and to train professional workers, four such training courses for 419 participants in 2004.

4. Prevention and Control of Rare Diseases

To strengthen medical care for patients of rare diseases, rare disease patients leading to physical and mental impairment are included in the Physically and Mentally Disabled Protection Act. They are also included in the serious illnesses and injuries in the National Health Insurance to waive their co-payment for medical care. On December 24, 2004, the Legislative Yuan passed the partial amendment of the Rare Disease Control and Orphan Drug Act. Some

128 rare diseases in 108 categories have been recognized through review and announced. A list of 71 orphan drugs for rare diseases and their indications has been announced. A list of 40 special dietary foods for rare disease patients and their indications has been announced. Subsidies have been made to support the establishment of a special dietary food supply center, a drug supply center for rare disease patients. Work has also been done to promote international laboratory testing through collaboration; and to establish a counseling window and databanks. In the period between August 9, 2000 and end of December 2004, a total of 1,674 cases had been reported.

5. The More Children Advocacy

Statistics shows that the total fertility rate of Taiwan was already as low as 1.2 in 2003. To promote willingness for more reproduction, the Department drafted a More Children Advocacy Plan to educate the public through various channels the concepts of "reproduction and family value", "sharing of responsibilities in a married life by both parties", and "love life and value family line". A survey on attitudes toward marriage and reproduction, and a forum on building a high-quality and healthy reproductive environment have been conducted. Various channels of communication have been used to appeal to the younger generations with calls such as, "children are hope of the future", "give children companies", and "have the first child before 30; have the second one before 35".

2.Health Promotion for Children and Adolescents

To reduce the occurrence and deaths of accidents and injuries, action was taken to promote accident prevention and safety projects, such as road traffic safety, safety in communities and on campuses, home safety, and drowning prevention. In 2004, in accordance with the theme of the World Health Day 2005, Road Safety, a series of campaigns were organized to attract some 20,000 people. Sixty primary schools, kindergartens and nurseries were supervised to improve their play facilities; 240 seed-teachers on the safety of play facilities were trained in four groups. Three exhibitions on school safety had been organized in collaboration with the Ministry of Education and the Ministry of the Interior for 255 participants. In six high-risk areas, drowning prevention measures was intensified. A website on the safety of all waters has been established. 500 households with young children were inspected of their home environment for safety and improvement by health bureaus and health stations in 25 counties and cities.

The project, "mouth-rinsing with fluoridated water for the prevention of dental caries, had a participation of 1.9 million school children in 2,638 primary schools in 25 counties and cities. Another project, monitoring the quality of screening for visual health and strabismus and amblyopia in children of five-years old, carried out by local health bureaus in collaboration with teachers and care-takers of kindergartens and nurseries had thus far screened some 260,000 person-times of children. For hearing care, in 2004, some 120,000 newborns and young children were screening for hearing. Any children with abnormal findings are referred for correction. A joint committee on the hearing of infants and young children has been established; a guiding manual on the hearing screening of infants and young children was produced; awebsite, http://www.bhp.doh.gov.tw/, provides relevant information on the hearing screening services for the newborns.

For adolescents, work was done in collaboration with education authorities to promote sex education in primary and junior high schools. Campaigns were organized to advocate sex education by health stations together with private sector organizations and community organizations. 33 clinics for adolescent health and three health centers for adolescents were subsidized to provide the adolescents with services in healthcare, counseling and referral; some 27,486 person-times of adolescents had availed themselves of these services thus far. The functions of the website for adolescents have been augmented to include pages of "relativity of love" and "true love can wait" to proved adolescents with accurate infor-

mation on sexuality and healthcare.

3.Health Promotion for Adults and the Elderly

Statistics show that Taiwan has entered an aged society. Adults and the elderly are more likely to suffer from diseases such as diabetes, cardiovascular diseases, strokes, asthma and renal diseases, and they are among the ten leading causes of death in Taiwan; and the healthcare of women in the menopausal period has become a global issue. Prevention and control of the five diseases mentioned above and the healthcare of women in the menopausal period were some of the priorities for the year 2004.

In 19 counties and cities of Keelung City and others, a pilot project on integrated preventive healthcare service was promoted; guideline of integrated screening in communities have been established; workshops for education and training in the northern, central, southern and eastern regions of Taiwan have been set up. In 25 counties and cities, the shared care of diabetes systems have been promoted; some 350 townships and districts have participated in this project, at a coverage rate of 95%. Under the supervision of the Department, 130 medical care institutions have set up health promotion centers for diabetes patients; 379 diabetes patients supporting groups have been established. Four hospitals including the National Taiwan University Hospital have been subsidized to carry out a pilot project on the prevention and care of strokes. 72 medical care institutions have been supervised to set up centers for the promotion of healthcare counseling and services for asthma patients. Educational procedures and materials for renal diseases have been completed, and 12 renal care promotion institutions have been set up. 15 hospitals and community organizations have been supervised to implement a pilot project on the growth groups for menopause and volunteer training. A hotline, 0800-005107, is available for women for counseling on problems of menopause. The elderly are encouraged to accept examination for glaucoma; and six vision health centers have been set up with the support of community ophthalmology resources to provide services in outpatient care, education and training, and healthcare counseling. Educational materials on the health promotion for adults and the elderly have been developed and produced for the education of the public through various media channels.

4. National Nutrition

1. National Nutrition Surveys and the Establishment of National Nutrition Standards

The Department commissioned the Academia Sinica to carry out a five-year "Survey on Changes in Nutrition and Health Statuses in Taiwan, 2004-2008: Planning, Designing and Implementation". In the first year, planning of the survey mechanism, development of survey tools (CAPI and others), sampling design, establishment of a mechanism for sample list, design for the quality control of information retrieval, and preparation of a pilot test have been completed. This Survey intends to study the diet and nutrition, KAP (knowledge, attitude and practice) of nutrition, and nutrition-associated diseases of all people above the age of 0 year, to understand the current nutrition problems and nutrition-associated diseases for each age group, and thus to develop nutrition improvement plans and policies.

The five-year "Survey on Changes in Nutrition and Health Statuses, 1997-2002" has completed survey of the diet of the elderly 65 and above and school children 6-12 years, their physical examinations and questionnaire interview. Scholars and experts will be invited to elaborate on the part concerning the elderly, and survey findings will be compiled in a volume, "Current Status of Nutrition of the Elderly", for the reference of all.

2. Nutrition Labeling of Packaged Foods on Market

To improve consumers' knowledge on the nutrition labeling and to provide them with information for reference in choosing foods, since 1991, a system for the nutrition labeling of domestic packaged foods on market has been promoted. To

encourage the voluntary labeling by industries and to promote this system step by step, a set of Standards for the Nutrition Labeling of Packaged Foods on Market was announced and implemented on January 1, 2002, requiring all packaged foods on market making nutritional claims to carry nutrition labeling. Beginning January 2003, beverages and dairy products shall practice the nutrition labeling system; fat and ice products in January 2004; and bakery and cereals in January 2005. Cannery and confectionary industries in January 2006, dehydrated and preserved packaged food Products. have also been actively supervised to develop their capability in building data for nutrition labeling and thus to practice this system eventually.

3. Management of Infant Formulas

To protect the health of infants, infant formulas and formula-assisted foods for infants must undergo registration and market approval. They can only be sold after permission is granted by the Department. A list of registered special dietary foods is published on the DOH website for the reference of the public. In coordination with the breast-feeding promotion policy and the WHO's international regulations governing the sales of breast-milk substitutes, infant formulas and formula-assisted foods for infants shall not be advertised or promoted.

4. Education on Food Sanitation and Nutrition

To augment the effects of education on food sanitation and nutrition, various educational materials have been produced for distribution through newspapers and mass media. Specific themes advocated are: nutrition labeling system for foods, genetically modified foods, and nutrition of the elderly. Through educational activities and broadcasting on air, the public is supplied with information related to nutrition.

Local health agencies are supervised and subsidized to organize educational campaigns on food sanitation and nutrition such as body weight control classes, fat-reducing tours, principles in choosing and buying foods, healthy diet, and staying young and healthy.

A five-year project, "Healthy Body for Adult-Challenging 1824", has been promoted to encourage the public to regularly record their body weight, and thus to help them understand the correct body weight. The public is educated to control their body weight through correct methods to a BMI (body mass index) of 18.5 to 24, and thus to reduce hazards of chronic diseases brought about by excess weight or obesity. Mobile activities in communities and broadcasting through mass media are conducted to disseminate information to the public.

Campaigns such as, "reducing fat and staying away from diseases", "body-weight control classes", "school diet", "prevention and control of food poisoning" are held by the Department together with local health agencies on seasonal basis. Real-time information is available on the food information website for the reference of health agencies at all levels, the academic circles, food industries and the general public.

5. Tobacco Control

Studies show that smoking in Taiwan is a serious problem. In 2003, the smoking rates for adult males and females were 45.9% and 6.2%, respectively, amounting to some 4.9 million smoking population. Each year, some 18,800 persons have died of smoking-associated diseases, costing the National Health Insurance some NT$ 20 billion in medical costs for the care of tobacco-induced diseases. 10% of the health and welfare tax on tobacco products levied in accordance with the Tobacco and Alcohol Tax Act is allocated specifically tobacco control. The following measures are thus taken to reduce smoking rates, to improve smoking cessation rates, and to control second-hand smoking.

1. Building Infrastructures for Tobacco Hazards Prevention Act

In 2004, local competent authorities had been supervised to undertake the inspections to insure compliance with Tobacco Hazards Prevention Act for some 350,000 times and to penalize 5,542 viola-

tion cases. An information system on the reporting of inspections and management of violation cases, a databank on tobacco hazards prevention policies, and a service center for the handling of violation cases have been set up and operated. By the end of 2004, 855 cases had been reported. A manual of relevant tobacco control laws and regulations have been compiled. Amendment of the Tobacco Hazards Prevention Act has been actively promoted. In manpower development, training programs for outpatient clinic doctors in smoking cessation and other medical personnel, employees of local health authorities, and volunteers have been organized.

2. Creating a Smoke-Free Environment and Reducing Hazards of Second-Hand Smoking

To ensure the health rights of the non-smoking people, the Department has actively promoted the following projects of refusing second-hand smoking in communities, schools, worksites and Armed Forces.

1) Smoke-free restaurants: restaurants are supervised to create a smoke-free environment; they are assessed and encouraged. By the end of 2004, some 5,000 restaurants in 25 counties and cities had participated in this project.
2) Smoke-free schools: to protect school children from hazards of second-hand smoking, county and city health bureaus and education authorities join together to promote a smoke-free school project in 222 schools.
3) Smoke-free worksites: to protect the health of employees, managers of industries have been assisted in formulating smoke-free policies to create a smoke-free environment, and to provide counseling on smoking cessation. By the end of 2004, 333 establishments had participated in this project
4) Smoke-free Armed Forces: to reduce smoking rate in Armed Forces, Reduce exposure second hand smoke to improve smoking cessation rate, a tobacco hazards prevention plan in Armed Forces has been carried out to reach the goal of smoke-free Armed Forces.

3. Installation of a Multi-Faceted Non-Smoking Service Network to Provide Accessible and Convenient Smoking Cessation Services

A project, Subsidies to Medical Care Institutions on Smoking Cessation Services, has been promoted to gain support of 956 medical care institutions. By the end of 2004, services had been provided to 42,001 individuals. A hotline on smoking cessation service, 0800-63-63-63, began operation in January 2003, to attract thus far 51,373 persons for counseling on smoking cessation. Smoking cessation classes have been set up in medical care institutions in 25 counties and cities; and training for seed teachers on smoking cessation has been organized to upgrade service quality.

4. Anti-Smoking Publicity

Mass media such as newspapers, dramas, commercials and the Internet have been used extensively for publicity on tobacco hazards control. Campaigns such as a photo-contest, “Throw Away Your Cigarettes”, a smoke-free family project, and creative commercials on anti-smoking have been promoted. Studies have been conducted on the sales and promotion behaviors of tobacco products to upgrade the effects of anti-smoking publicity.

5. International Cooperation in Tobacco Hazards Prevention

Through the multilateral cooperation mode, a project, Technical Cooperation in Tobacco Hazards Prevention in Cambodia, has been implemented. The visibility of Taiwan in tobacco control in international community has been enhanced. By way of seed training, technical learning and exchanges, workshops on anti-smoking have been organized for the youths to develop young manpower in tobacco control. Delegates have been sent to the WHO's FCTC (Framework Convention on Tobacco Control) meetings; and efforts have been made to ratify the FCTC. Amendment of the Tobacco Hazards Prevention Act has been drafted based on the contents and essences of the FCTC to demonstrate the determination of Taiwan tobacco control.

6. Testing and Monitoring of Tobacco Products

A Tobacco Products Testing and Research and Development Center has been set up. In 2004, 216 specimens in 36 tobacco products had been tested for their quality. Their contents of nicotine, tar and carbon monoxide are found to comply with the current maximum allowances of Law. A project, Standards on Sanitary Quality Control and Inspection of Tobacco Products Manufacturer, has been implemented. In research and monitoring, in 2004, 28 projects on policies and regulations, communication and publicity, preventive education and smoking cessation, monitoring research, specific ethnic groups and manpower development had been conducted for reference in the formulation of policies.

6. Prevention and Control of Cancer

Since 1982, cancer has been the top of the ten leading causes of death in Taiwan; the mortality and incidence have increased year by year. In 1982, the standardized mortality of cancer was 105.8 per 100,000 populations, and the incidence was 111.27. In 2003, the standardized mortality was 156.0 per 100,000. In 2001, the standardized incidence was 261.13. In the last twenty years, the mortality of all cancers for males, with the exception of the stomach cancer which has declined year by year, have increased; four-folds for oral cancer . For females, the mortality of cervical cancer and stomach cancer has declined; whereas that of breast cancer has increased sharply. In incidence, the increase in males is more significant in oral cancer and prostate cancer; for females, the increase is sharp in liver cancer and breast cancer.

To reduce the threat of cancer to health, the following cancer control plans have been promoted.

1. In accordance with the Cancer Prevention Act, a five-year cancer control plan has been formulated to set up cancer control networks to provide overall services in the prevention, screening and care of cancer.
2. A betel-quid chewing control project has been promoted in schools in the high betel-quid chewing areas to help students understand the hazards of betel-quid chewing. A health education intervention project has been carried out in schools in Hualien, and Taichung.
3. Screening services have been promoted. By the end of 2004, 3.41 million women above the age of 30 years had accepted cervical Pap smear test in the last three years; 45,000 women in the 50-69 age groups had accepted mammography screening. 300,000 smokers or betel-quid chewers had accepted mucous membrane examination for oral cancer; and 200,000 persons in the 50-69 years old had received fecal occult blood test. The mortality of invasive cervical cancer in the Taiwan though has declined; screening rates for other cancers have to be improved to curb the rapid growth of mortality.
4. In 2001, 17 hospitals had been subsidized to set up a Cancer Prevention Center. In October 2004, a project, Cancer Prevention Center-Improving Quality of Diagnosis and Treatment for Cancer, was implemented in 27 hospitals to encourage them to provide patient-centered services.
5. To enable the pain control of cancer patients at terminal stage and to face death solemnly and peacefully, a project to educate the public on palliative care

has been promoted; and more palliative care facilities have been added. The number of hospitals in inpatient care and home care of cancer patients is now 25 and 49, respectively. A pilot project on the shared palliative care has been conducted for some 7,500 person, a growth of 20%.

6. To improve the life quality of cancer patients, in 2004, a project, Services to Cancer Patients, had been promoted to provide telephone counseling services, psychological counseling, case management and rentals of rehabilitation instruments.

7. Community Health

1. Reconstruction and Expansion of Primary Health Center (PHC) and Upgrading of Information Systems and Service Quality

In 2004, 12 PHCs had been subsidized for reconstruction, expansion and renovation to provide the public with more friendly and safer space for community healthcare services. To improve the working efficiency of PHCs, information system of the Windows version, has been updated. To help staffs of PHCs understand the laws and regulations that are enforced by them, a collection of some common senses on laws and regulations for health stations has been published for distribution to all health bureaus and PHCs.

2. Promotion of Community-Based Healthy Life

1) Establishing a bottom-up community health building mechanism: By the end of 2004, 302 communities had been subsidized to set up community health building centers (including 46 in remote areas and offshore islands). 2,550 non-health related private sector organizations have been approached to jointly promote healthcare. 12,262 volunteers for community health building have been recruited. Of the community health building centers, 39 have been selected to become a professional promotion center. Through these professional promotion centers, health building activities in the neighboring communities have been strengthened. Research institutions have been commissioned to conduct studies with a view to develop data relevant to the development of the indigenous community health building projects.
2) Developing community health building promotion manpower: An industry-government-academics triangular collaboration has been established. Supervision is carried out in the northern, central, southern and eastern Taiwan regions. 46 training courses have been organized; and 40 coordination meetings for health bureaus and community health building centers have been held. The Fujen Catholic University has been entrusted to develop operational procedures for the training of volunteers and a work manual.
3) Promoting Healthy City Project: A project has been entrusted to implement the second-year plan of building Tainan City as a healthy city. The WHO indexes of healthy city have been collected; and indigenous indexes for a healthy Tainan City have been developed. An Official white book illustrating the promotion models and steps toward a healthy Tainan City has been published. Tainan City Government has re-allocated budgets in 2005 following the indexes of a healthy city to jointly promote healthy public policies.
4) Disseminating new health values: 13 documentaries on community health building and two 30-second multimedia films have been produced. 5,000 copies each of a leaflet in Chinese and English version have been disseminated.
5) Promoting healthy environment and space building: The public are encouraged to participate in, learn about and discover their own environment and health problems to plan together for the building of a healthy environment and space, and to practice healthy behaviors. Plans for the promotion of healthy environment and space building have been publicly solicited. 54 projects on healthy environment and space building have thus far been promoted throughout the country.

3. Occupational Health

Two occupational health centers, one in the Southern Taiwan region, and another one in the central Taiwan region, have been established in collabo-

ration with private sector resources. Demonstration healthy workplaces have been set up. 34 workplaces have been subsidized to implement the Workplace Health Promotion Project to construct a healthy and safe work environment. Counseling services on labor occupational diseases and injuries have been made more accessible. Occupational diseases and injuries repertory system are updated. Training of health professionals for occupational health promotion and prevention and control of occupational diseases has been reorganized.

VII. Pharmaceutical Affairs and Food Safety

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1. Risk Management on Drug Safety and Health Education

Now that Taiwan is a member of the WTO (World Trade Organization) and the APEC, the international trade of pharmaceuticals has increased in volumes day by day. Since the opening of market, the importation of drugs has posed a drastic impact on the management of pharmaceutical affairs, and the overflow of illegal medicines on market are also a threat to the safety of drug use. To protect the public in drug safety, to strengthen the operation of the pharmaceutical management systems, and to educate the public on the safe use of drugs are, therefore, some of the urgent issues that the Department is facing. The Department, in addition to establishing a strict drug review system and a pharmaceutical management system, action has also been taken to promote measures such as the labeling of drugs in Chinese and the display of the original bottles on shelves. To widely disseminate information on the correct use of drugs, to provide the public with community channels for access to drug use information, the Department has, since January 2003, organized courses on Drug Safety in all community colleges by inviting scholars experts, and pharmacists experienced community to lecture. By the end of 2004, 51 such courses had been organized for 1,983 participants. In the management of pharmacies, by the end of December 2004, There were 7,451 pharmacies, 44,590 drug dealers, 749 manufacturers, totaling 52,790 firms. To strengthen management, the Department supervises local health bureaus to conduct unscheduled inspections of pharmaceutical firms, and to hold meetings with pharmaceutical dealers for better communication to understand their problems, and to provide them with solutions. Each year, a national conference on pharmaceutical affairs is held to strengthen coordination among health agencies.

The new institution on the separation of drug dispensing from medical practice was announced on August 30, 2002, effective January 1, 2003. Currently, 23 counties and cities have practiced the new 1.8 kilometer system for the separation of dispensing from prescribing. To strengthen primary care and to build a humanitarian healthcare environment in communities, the Department has actively promoted the integration of community pharmaceutical services and medical care. Each county and city is asked for developing local pharmaceutical-medical collaboration program, to strengthen The function of the program is community pharmacies in healthcare, to intensify the professional capabilities of pharmacists, to promote the virtuous interaction between pharmaceutical and medical care circles, and to develop a community-based pharmaceutical-medical collaboration model. Thus far, there have been ten successful cases, and eight more are developing small-scale pharmaceutical care service networks. In 2004, 20 communities in 17 counties and cities were accepted to promote pharmaceutical services. This practice would be continued into 2005.

To promote the research and development of new drugs and related manufacturing technologies to upgrade the standard of the domestic pharmaceutical industries, the Department, in accordance with regulations of Article 41 of the Pharmaceutical Affairs Act, announced jointly with the Industrial Development Bureau of the Ministry of Economic Affairs on November 20, 2000, a set of Regulations Governing Incentive Measures for the Technology Research and Development of Pharmaceuticals to specify qualifications and conditions for application and methods of review and approval. In 2004, 12 applications met the requirement after careful

review; five for pharmaceuticals, four for medical devices, and three on manufacturing techniques. A total of NT$ 4.65 million was appropriated as incentives.

Monitoring of advertisements of pharmaceuticals and cosmetics broadcast on illegal radio stations is done by the Government Information Office and the Ministry of Communications. The recorded materials are sent to the Department for processing and punishment. In the year of 2004, 174 advertisements in violation of regulations had been detected. They were referred to local health bureaus for necessary action and follow-up. Thus far, 84 cases had been processed, and the fines had accumulated to NT$ 3.99 million. The Department also implements a plan for the monitoring of illegal advertisements on medical care, pharmaceuticals, cosmetics and foods. In the period between August and December 2004, focuses were placed on placement advertisements and commercials on TVs, radio stations (15) and websites. A total of 795 cases had been detected. They had been referred to local health bureaus for action.

2. Registration and Market Approval of Medicaments and Cosmetics

By regulations of the Pharmaceutical Affairs Act, pharmaceuticals and certain medical devices that are required of registration and market approval must apply for registration and market approval. They can be manufactured, imported or sold only after permit licenses are granted. General cosmetics can be placed on market without registration and market approval; though regulations on the sanitary control of cosmetics shall be observed, and products shall be properly labeled. Medicated cosmetics shall apply to the Bureau of Food and Drug Analysis of the Department for registration and market approval. They can be manufactured, imported or sold only after permit licenses are granted.

To meet the increasing workload, following experience of the US and Japan in pharmaceuticals review, a Corporate Center of Drug Evaluation (CDE) was established on July 13, 1998. The Center accepts the requirement from the Department to review new drugs and new technologies of clinical trials. To control quality improvement efficiency and to coordinate with the need for development of domestic pharmaceutical industries. By the end of 2004, 765 cases of clinical trials (including 224 new applications and 541 re-applications), 200 new drugs for registration and market approval (including 137 new applications and 63 re-applications) had been accepted for review.

The goals of the review and management of biological products are to assure safety, efficacy and quality; to promote the development of technology; and to protect the interest of patients in medical care. "Standards for the Review of Biological Products" and other related laws and regulations have been formulated. Beginning in 2001, standards to govern registration and market approval have been announced for five types of pharmaceuticals, operational standards for blood plasma raw materials for manufacturing, blood plasma products for human use, biological diagnostic reagents for external use, genetically engineered pharmaceuticals, allergenic drugs, and vaccines. A book, Review Criteria for Registration and Market Approval of Pharmaceuticals-Registration and Market Approval of Biological Products, was officially published in April 2002 to continue to establish management systems and management mechanisms for biological products. Applications and approvals of new biological products are increasing year by year; the efficiency of review has been improved, and the processing time is shortened.

To implement the Executive Yuan's policy on the promotion of biological technologies, and to respond to the global trend on the management of diagnostic reagents for external use, December 20, 2002, Department announced the amendment of the Classification of Medical Devices by Level and relevant regulations regarding their management to include diagnostic reagents for external use under management. On February 7, 2003, the Department further announced that diagnostic reagents for external use originally managed as pharmaceuticals would

now be managed as medical devices. In coordination with the new system, July 31, 2003, the Department announced Notice on the Registration and Market Approval of Diagnostic Reagents for External Use. On December 26, 2003, the Department announced again the Guiding Manual on the GMP Standards of Diagnostic Reagents for External Use to establish a management mechanism for diagnostic reagents for external use.

In October 1994, a new version of a computer system for the management of permit licenses for pharmaceuticals and medicated cosmetics was completed. To reduce the size of the system and make it more adequate for retrieval and online operation, in December 2001, a new version of the pharmaceutical management system was completed. This system can build more complete data on the market approval of pharmaceuticals and medicated cosmetics, and therefore, is helpful in checking, analysis and compilation of statistics. The system also allows the download of various application forms and provides various kinds of information for applicants in convenience way.

3. Drug Safety Surveillance and Compensations for Drug Hazards

To protect the safe use of drugs, the Department is extremely concerned with the safety of drugs after marketing; therefore, in addition to continue practicing the safety surveillance system of new drugs, to meet the amendment of Article 45 of the Pharmaceutical Affairs Act and the global trend, announced on September 9, 2004, A set of Regulations Governing Management of Drug Safety Surveillance, which the period of safety surveillance for new drugs was shortened from seven years to five years. During the surveillance period, the manufacturers are required, beginning from the day the permit license is issued, to submit periodic safety report every six months in the first two years, and annually in the last three years for the Department to assess their safety, and thus to establish a sound risk management mechanism for pharmaceuticals and to protect the safe use of drugs of the public.

To timely detect any adverse reactions of new drugs that were not discovered in clinical trials, the Department, in addition to urging medical professionals and the public to report on their own initiative any adverse reactions of drugs, set up in August 1998 a national reporting system for adverse reactions of drugs, and subsequently reporting centers in the northern, central, southern and eastern regions, to collect information on the adverse reactions of drugs. The information is assessed by clinical experts and submitted to the Department for necessary action. By December 2004, 8,913 reports on the adverse reactions of drugs on market, and 9,466 reports on the adverse reactions of drugs under clinical trials had been received. They have been assessed and files established. A Newsletter on Drug Safety has been published for nine issues.

The Five-year Mid-term Plan for the Establishment of a Drug Identification System is implemented. The Plan comes in three parts, establishment of drug identification codes for domestic drug manufacturers and dealers, construction of a databank of instructions on drug use, and compilation of a manual for the identification of drugs by their appearance and establishment of an online inquiry system. Thus far, four volumes of the manual for the identification of drugs by appearance have been issued. Users of these volumes can check the Chinese and English names and ingredients of each drug (totaling 4,200) by their external appearances (marks, words, figures and shapes), and identify them on the basis of their color pictures. This multiple inquiry system makes identification easier. At the same time, the Department has assisted drug dealers and manufacturers in establishing 563 identification systems. By 2004, 7,358 instructions for drug use had been included in the databanks. Through the implementation of this Plan, all drugs approved for marketing in Taiwan have their unique identification codes, avoiding mistakes by medical personnel and the public as well in the use of drugs. The contents of the manual are linked to the permit license databanks for inquiry by professionals and the public.

To provide timely relief for victims who have suffered harm from the normal use of legal drugs, the Department established a drug hazard relief system in October 1998. On May 31, 2000, the Drug Hazard Relief Act was promulgated. By the end of 2004, 410 applications had been reviewed; of them, 170 were determined eligible for the drug hazard relief; the rate of compensation was 41.46%, and the amount paid was NT$ 65 million.

4. Bridging Studies and Good Clinical Practice

The amendment made on July 7, 1993 (the so-called 7-7 announcement) specifies that applications for the registration and market approval of new drugs shall be accompanied by reports of domestic clinical trials. The further amended announcement on December 12, 2000 (the so-called 12-12 announcement) and announced in May 2002 of the "bridging study standards" stipulates that domestic clinical trials, by international specifications, be amended as bridging studies. The Executive Yuan's Plan for the Promotion of Biotechnology Industries has made the establishment of comprehensive medical infrastructures for biotechnology an important measure. In which, the establishment of sound clinical trial systems and operational mechanisms for new drugs, a working goal that must be attained as early as possible aims at promoting the capabilities of the pharmaceutical industries in Taiwan in the research and development of pharmaceuticals, and also at developing Taiwan into the Asia-Pacific Clinical Trial Center. In line with the government policy, and to regulate the ethics and scientific quality of the design, execution, recording and reporting of clinical trials, and to assure the rights, safety and welfare of those under trials and the reliability of clinical trial data, the Department announced in 1996 the Good Clinical Practice (GCP) standards for pharmaceuticals; later amended in September 2002. This was further amended in January 2005 as the Standards of GCP for Pharmaceuticals. To strengthen the protection of those under trials, in 2000, the first liability insurance policy on clinical trials of pharmaceuticals was issued. Thus far, 79 such policies have been issued.

To cope with the global economic system, to promote international exchanges and cooperation of industries, to attain the goal of mutual recognition in international community, and thus to allow countries in the Asia-Pacific region to freely exchange and enrich laws and regulations related to medical technology and development pharmaceutical industries, and sharing of information concerning policies on the development of clinical trials, an APEC International Symposium was held in Taipei in May 2001, discuss scholars and experts from all over the world the issues of the effects of ethnic factors on the safety and efficacy of medicines. Moreover, with the integration and consolidation of international standards on the review of new drugs, the Department hosted the 2003 APEC International Symposium in November 2003 in Taipei to share experiences with other countries on the issues of harmonization of statutes of international associations, bridging studies, and drug safety surveillance systems. Clinical trials are an important link in the development of new drugs. Such as give the people access to more advanced pharmaceutical products as quickly as possible, to assure consumers of safety and efficacy in the use of new drugs, and to upgrade the capability and quality of executing clinical trials of new drugs, and the Department continues to organize training courses; will now 8,000 cases have participated, and 188 clinical trials have been reviewed and approved soon after their reports are submitted.

In the second half of 1999, the Department began to implement the Plan for the Improvement of Clinical Trial System and Operational Mechanism for New Drugs. Subsidies have also been made available for the establishment of clinical trial wards and related laboratories for new drugs. By integrating resources and following consistent standards of the GCP, and in accordance with relevant laws and regulations concerning clinical trials, the Department had coordinated and subsidized on priority basis some medical centers, in 2004 nine medical centers, the National Taiwan University Hospital, the Tri-Service General Hospital, the National Chengkung

University Hospital and the China Medical University Hospital, and subsidized partially the Taichung Veterans' General Hospital, the Changhua Christian Hospital, the Chimei General Hospital and the Tze Chi General Hospital, to set up early-stage clinical trial research wards and related pharmacokinetics laboratories. The Department has also developed manpower training methods and conducted training so as to establish a comprehensive clinical trial system for new drugs and their review and approval systems, and to provide a basic environment for the development of new drugs in Taiwan, and thus to attain the goal of developing Taiwan into a center of biopharmaceutical industries for the Asia-Pacific region.

5. Supervision and Management of Pharmaceutical Industries

To upgrade the quality of Taiwan's pharmaceutical products and strengthen their international competitiveness, the Department, in conjunction with the Ministry of Economic Affairs, announced on May 1, 1999, the Good Manufacturing Practice (GMP) Standards for Drugs, and in October of the same year, the Operational Schedule for the Validation of Pharmaceuticals. Validation of imported pharmaceuticals has been promoted; and the overall validation is expected to be completed by December 10, 2005. The Department is also promoting GMP for raw medicinal materials. In the early stage, the free certification approach will be adopted. Steps for the overall implementation of this practice and accompanying measures are currently under planning. By the end of 2004, 168 domestic pharmaceutical plants had completed the first stage of cGMP validation; of them, 162 had completed the second-stage cGMP validation, and 41 had completed the third stage validation. In addition, 716 drug importation plants had completed the first-stage cGMP validation; of them, 325 had completed accreditation for the second-stage cGMP validation.

The Department continues to promote the GMP accreditation for medical devices. By 2004, 207 domestic medical device factories had completed registration for GMP, and 1,443 companies had registered as QSD importers of medical devices. In January 1998, the Department signed an exchange of letters on medical devices with the US Food and Drug Administration and, in coordination with the Ministry of Economic Affairs, signed another exchange of letters with the EU. The aim of these efforts is to advance international harmonization and mutual recognition in the management of medical devices through exchange of technological information. Representatives of the Department subsequently attended in March 2004, the EU MDEG meeting to report on plans of collaboration; and in July, EU representatives (including France and Greece) visited Taiwan for orientation on the laws and regulations related to medical devices. In 2002, with the support and promotion of the Department, three commissioned inspection institutions (the Center for Measurement Standards of the Industrial Technology Research Institute, Metal Industries Research and Development Center, and Electronics Testing Center, Taiwan) were entrusted to negotiate with the EU Notified Bodies on a three-year Technical Coordination Program. In 2004, the three commissioned inspection institutions signed a technical cooperation agreement on the inspection of medical device factories in Taiwan and the EU countries with six EU inspection institutions, the TÜV Product Service of Germany, G-MED of France, MDC (Medical Device Certification) of Germany, British Standards Institution Product Services and TÜV Rheinland Product Safety. On November 2004, a document, technical cooperation between the DOH commissioned inspection institutions and the EU inspection institutions on the simplification of applications for the GMP of medical devices, was announced under Wei-Shu-Yao No. 0930328320, to establish a rapid certification mechanism for domestic and importation industries of medical devices in the certification and inspection of manufacturing quality system. The Department also held on March 4, 2004, a symposium on the US management regulations of medical devices to invite US FDA official, Dr John Stigi to elaborate on the relevant US regulations for the knowledge of local organizations and industries and

to help upgrade the quality of domestic medical device industries. In April of the same year, the AHWP technical meeting was held at the Grand Hotel of Taipei for delegates from 16 countries.

6. Food Safety

1. Amendments of Laws and Regulations and Announcements

To strengthen the current management of food safety, to follow international practices, to reinforce self-control by industries, and to boost their responsibility for products, in 2005, 93 pesticide MRLs, 5 food additions of their scope, application and specification standards, and 7 food sanitation standards were provide gated and amende. All food sanitation laws and regulations have been translated into English and posted on the DOH website for the consultation of those concerned to make transparent the measures of the management of foods, and to follow provisions of the Agreement on the Application of sanitary and Phytorauitary Measures and agreement on Tchnical barriers to Trade under World Trade Organization.

2. Promotion of International Affairs on Food Safety

Taiwan became a member of the WTO on January 1, 2002. To cope with the impact on domestic food sanitation management as a result of market opening, and to strengthen the international competitiveness of local food industries, it is necessary to carry out a timely readjustment of the management framework and measures as to conform to the world trends, respond to the new tides in food trades, and link with the international community in the common effort to build a safe eating environment. In 2004, the Department sent several times officials to Geneva to attend the WTO committee meetings on laboratory testing for food safety and animal and plant quarantine measures. On these occasions, informal bilateral consultative meetings with other WTO member states were held to understand the latest development in food trade and safety and to present Taiwan's position. The Department has also actively participated in the APEC's Standards and Conformance meetings related to food standards, laboratory testing and coordination on mutual recognition. Participation has also been made in symposiums and training courses sponsored by the WTO, APEC and WHO to present the current status of food safety management systems in Taiwan and to share experiences with representatives of other countries.

3. Imported Foods

Inspection of foods on importation is a necessary measure to protect the health of the population. The Department, with reference to the relevant WTO agreements and the methods of some advanced countries, has announced a set of Regulations Governing the Inspection of Imported Foods. Random batch inspections, document reviews or validation registration is adopted for foods and importers that have had little poor record on sanitation and safety and a low rate of violations. For foods and importers that have had relatively high poor records on sanitation and safety and a relatively high rate of violations, each batch is examined and inspected. For imports of fresh foods such as vegetables and fishery products that cannot wait for the result of inspection, where there is no records of violation, the imports are first released and then inspected and followed-up the flows of unqualified products. For products of special need, monitoring inspection is used in the hope of protecting the health of the people while promoting the flow of international trade at the same time. To differentiate food products from the CO1 and CO2 codes for general imported products as designated by the Bureau of Standards, Metrology and Inspection of the Ministry of Economic Affairs, the Department has announced the codes FO1 and FO2 for imported food products for making applications for such products to the said Bureau in accordance with the stipulations of the Regulations Governing the Inspection of Imported Food Products announced by the Department. The Department has also announced that fresh and frozen fishery products and other raw-material type food products that the Ministry of Economic Affairs has not yet placed among the items subject to import inspection, will be

added to the items for inspection. Further, the Department has ruled that, to whatever CCC code they may belong, imported food products shall be subject to import inspection so as to make the inspection of imported foods more complete.

4. Surveillance of Food Poisoning Incidents

The Taiwan Area recorded 257 food poisoning outbreaks in 2004, inflicting 3,843 cases, with two deaths. Compared with 2003, when 246 cases of food poisoning outbreaks were reported and 5,234 cases inflicted, the number of outbreaks decreased by 11 (4%), while the number of cases decreased by 1,391 (25%). In 2004, the majority of the incidents were bacterial, primarily by *Vibrio parahaemoliticus*. For the food poisoning, a food poisoning reporting system is used to gain understanding of the follow-up management.

5. The first "Total Diet Study" in Taiwan

The "Total Diet Study" (TDS) is one of the important programs of the Global Environment Monitoring System-Food Contamination Monitoring and Assessment Program (GEMS/Food) in the Department of Food Safety of WHO. The TDS ensures that substances and contaminants in the national or international food supply are within acceptable health standards.

The TDS has been developed by increasing the food commodities tested, extending the range of contaminant analysis and including an estimation of dietary exposure to particular contaminants and substances from ready to eat foods. Hence, the TDS has become a key tool for food safety evaluation and is commonly used in some countries.

The Bureau of Food Safety, Department of Health, developed the first Total Diet Study in Taiwan in 2002.The 130 commodities in the food list include: 20 core foods, 66 national foods and 44 regional foods. The objectives of the program are to determine the levels of 190 pesticide residues, 8 heavy metals, afltaoxins and dioxins in selected food items. Eight areas and four seasons are organized to collect all core food samples. In addition, four areas are selected and two seasons for regional foods, and two areas and one season for national foods. The preparation of the food consumption database includes: food consumption data in sex-age-gender subgroups, food classification and food coding system, food grouping and food list, and food preparation guides and the methods for estimating dietary exposure to contaminants.

7. Registration and Market Approval of Foods

The management of food safety is not done primarily by pre-marketing approval and licensing. However, a system of pre-marketing approval management is necessary for some foods of relatively high safety concerns.

1. Imported Foods in Tablet and Capsule Forms and Food Additives

In accordance with regulations of Article 14 of the Food Sanitation Control Act, announcement has been made that the following products may not be manufactured, processed, prepared, repacked, imported or exported without being inspected, registered and permit license issued: food additives for single food item, and imported foods in tablet and capsule forms. Foods in tablet and capsule forms are similar to drugs in appearance; this requirement is to help consumers to avoid mistakenly purchasing and using them as medicines.

2. Health Foods

In accordance with regulations of the Health Food Control Act, health foods may not be manufactured, imported, or labeled or advertised as health foods, or emphasized as having health promoting functions, unless they are inspected, registered and approved. Health foods must conform to safety, and their health promotion properties must undergo scientific assessment, or theoretically proved to be non-hazardous and with distinct and stable health promoting functions before they can be certified as health foods. By the end of 2004, 51 such products had been approved as health foods.

3. Genetically Modified Food Products

On February 22, 2001, the Department announced the regulations governing the registration and market approval and labeling of the genetically modified soybeans and corn, and immediately implemented a system of voluntary labeling of non-genetically modified food products. Since 2003, a compulsory labeling system for these products has been established for implementation in three stages depending on the extent of processing. By the end of 2004, 11 applications for permit for genetically modified soybeans and corn had been reviewed and approved.

4. Management of Special Dietary Foods

By regulations, special dietary foods such as infant formulas, formula-assisted foods for infants, and foods for patients must apply for registration and market approval. Their labeling, promotion and advertisement shall not be dishonest, exaggerated or leading consumers to believe their medical efficacy. They must conform to regulations of the Food Sanitation Control Act to enable consumers to make correct choice. The Department constantly collects information on the new standards of other countries, and regularly announces the items to be included in the labeling of such foods to strengthen the foundation of management.

8. Management of Food Industries

1. Promoting the Self-Control System of Food Industries

A Good Food Sanitation Practice was announced to generally promote the self-control by food industries, to improve the professional knowledge of the management personnel of health agencies, to supervise food industries to establish a self-control system, and thus to enhance their self-control capabilities and to attain the goal of controlling food production at the source of production. To encourage industries to establish self-control system, the Department has also helped in the promotion of non-mandatory GMP and CAS certification systems so that the self-control capabilities of food industries can be brought about indirectly through market mechanism.

2. Promoting Food Safety Control System

To conform to international management trends in food sanitation, the Department has promoted a food safety control system, aiming at helping manufacturers establish the necessary concepts of food safety control system through training and supervision. In December 2004, fishery product industries began to practice the food safety control system.

3. Supervision and Management of Food Delivery Industries

To guarantee food sanitation for consumers, and to assure the control of the sanitary quality of foods in the process from production, manufacturing, transportation and sales, all the way to the hands of consumers, in addition to the constant inspections of production sources conducted by health agencies at all levels, and regular supervision and inspections of foods on market and random checking, the Department has also used manpower of non-profit making organizations to strengthen sanitary supervision and management of "food delivery industries" that have direct contact and purchasing with the public to help them establish a self-control mechanism. Through symposiums, training courses, inspections and assessment, the industries have been helped develop self-control concepts and professional knowledge, and thus to establish a sanitary and safe food supply chains, and to achieve the effect of virtuous competition among industries. It is hoped that a management mechanism be established at the source of the consumer market, and thus to attain the goal of protecting the consumers.

In 2004, the ROC CAS Good Food Development Association was commissioned to conduct the sanitary assessment of the food delivery industries, focusing primarily on shopping malls. In total, 77 participated in the assessment; of them, 65 were qualified, at a qualification rate of 84%. Names of qualified shopping malls and information concerning the procurement, consumption and storage of low-temperature food are posted on the website,

http://food.doh.gov.tw.

4. Sanitary Management of Food Establishments

1) A licensing system for cooks in eight types of food service establishments was instituted in September 2001. By the end of 2004, a total of 22,012 cooks had acquired the licenses. Cooks in the eight types of food services are required to undergo each year on average eight hours of sanitation lectures to upgrade their professional knowledge in food sanitation.
2) "Healthy Diet" promotions were held in counties and cities and also included in the education of cooks. All domestic suppliers of boxed meals are expected to have the capability of producing healthy boxed meals beginning 2004; and by the end of 2006, all large-scale restaurants are expected to be able to provide healthy dishes to the public.
3) A pilot certification system for food safety control for food establishments was implemented, and 240 establishments have been certified. The Department hopes, through this pioneering effort, that the concept of food safety management be established at an early date.

9. Laboratory Testing of Drugs, Foods and Cosmetics

Laboratory testing of drugs, foods and cosmetics covers laboratory testing of drugs, biological products, medical devices, foods, food additives, food utensils, containers, packaging, food detergents, and medicated cosmetics.

1. Routine Testing

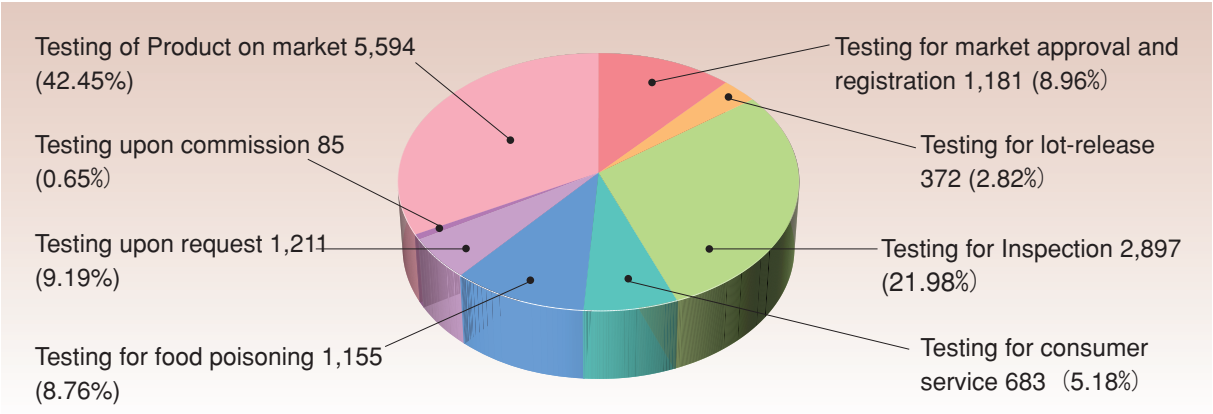
The DOH Bureau of Food and Drug Analysis carries out, in coordination with administrative management policies and relevant regulations, laboratory testing for registration and market approval, batch-sealing, inspection, services, assistance and testing on commissioned basis. The Bureau also carries out testing and confirmation for food poisoning incidents and outbreaks, such as testing for the methyl alcohol content in moonshine spirits.

In 2004, testing of 1,181 cases for registration and market approval, 372 cases for batch-sealing, 2,897 specimens collected through inspections by health bureaus, 683 testing for consumer services, 1,121 cases in support of other organizations, 85 cases commissioned for testing by other organizations and institutions, and 1,155 specimens of food poisoning incidents had been completed.

2. Major Surveys and Research Activities

Over the years, the Bureau of Food and Drug Analysis has conducted systematic random testing of drugs, foods and cosmetics sold on market to analyze and assess their sanitary quality and safety, and to discover and resolve problems at an early date. Comparative testing and analysis for consumer

Figure 7-1 Types of Laboratory Testing and Number of Specimens, 2004



goods on market have been carried out and the results announced since 1996 to strengthen the social responsibility of manufacturers regarding the sanitation and safety of their products and to protect the interest of consumers. Drugs from the mainland China are also tested, and the findings are announced and compiled into a series of "Knowing Drugs from Mainland China" booklets to caution the public against misusing these drugs. In 2004, 20 studies on the inspection of products on market such as, "surveillance of residual pesticides on vegetables sold in supermarkets", had been completed; 5,594 specimens had been tested; and findings of 12 laboratory testing for drugs, foods and cosmetics had been announced and posted on the website: http://www.nlfd.gov.tw.

Testing resources of the private sectors have been brought under management in order to establish a quality-management mechanism and to strengthen the spot-checking system for products on market. The Bureau also plans to implement the "Drug Quality Surveillance Plan", and in this end, has completed 16 surveillance projects for 2,205 specimens such as, "surveillance of generic medicines after expiration of patent rights-medicines for cardiovascular diseases and diseases of gastrointestinal systems".

In March 2004, a laboratory testing study to understand the likelihood of adulteration of animal ingredients in vegetarian diet foods on market was conducted to establish the qualitative screening method for animal ingredients in foods. The survey findings were announced on June 10 to arouse deep concerns in consumers, and to initiate vegetarian diet industries to form a trade association to upgrade the quality of vegetarian diet foods. In 2004, 159 cases of vegetarian diet foods on market had been surveyed, and part of the survey findings had already been announced. Local heath bureaus have been asked to conduct inspections and supervision of those foods adulterated with animal materials.

3. Laboratory Testing of Genetically Modified Food Products

The Bureau of Food and Drug Analysis of the Department has made efforts in the development of testing methods for genetically modified food products. The Bureau also conducts market surveys of these products. Thus far, qualitative testing methods for 18 genetically modified food products such as soybeans, corns, papayas, tomatoes and potatoes, and quantitative testing methods for nine genetically modified food products such as soybeans and corns have been established. 14 plasmid references for the testing of genetically modified soybeans, corns and potatoes have been constructed. These plasmid references can replace raw materials as reference materials. In coordination with the implementation of registration and market approval of genetically modified food products and their labeling system, in 2004, surveys and laboratory testing of 393 cases of labeling for soybeans, corns and papayas had been conducted; and local health bureaus were notified of the products in violation of regulations for action. To strengthen the education of the public, the website,http://gmo.doh.gov.tw, has been updated and expanded. A leaflet in 60,000 copies has been issued for the reference of the general public.

4. Promotion of Good Laboratory Practice

The Bureau is vigorously promoting the Good Laboratory Practice (GLP) system to upgrade the quality of testing. The quality manual and system documents were announced in July 2001, along with the guidelines on safety, sanitation and environmental protection. In May 2002, the CNLA laboratory accreditation was passed. In line with the government policy on accession to the World Trade Organization, guidance has been given to local health bureau laboratories in the establishment of the GLP system. By the end of 2004, 22 health bureaus had passed the CNLA accreditation.

5. Science and Technology Development

Development of new testing methods and the enhancement of testing research standards are among the goals of the Bureau of Food and Drug Analysis. In 2004, the Bureau produced 55 papers on testing methods, four papers on the amended standards for biological products, eight items on the quality standards of medical devices, 38 papers on laboratory testing methods for foods, and 46 science and technology development projects such as, study on the methods for detection of mycoplasma in recombinant DNA product in pharmaceutical formulations, production of serum reference standard for hepatitis C antibodies, identification and quantitative analysis of aristolochic acid in traditional Chinese medicinal prescriptions containing Asarum heterotropoides, investigation of the background levels of dioxins in food product, investigation of dioxin contents in human blood in Taiwan, and laboratory testing study and surveillance of genetically modified food products.

VIII. Management of Controlled Drugs

VIII. Management of Controlled Drugs

1. Promotion of the License Management System

To regulate the flow and use of controlled drugs from being abused, a license management system has been adopted in accordance with regulations of the Controlled Drugs Act. Registration certificates for controlled drugs are issued to related dealers and institutions; use permits are issued to professionals such as physicians, dentists, veterinarians and assistant veterinarians; and the export/import and manufacturing of controlled drugs are approved for each batch. Dealers and institutions are required to keep a book in their office to register the inbound and outbound dealings of controlled drugs and file reports regularly. The Department has set up a Controlled Drugs Review Committee to, from time to time, add, reduce items or revise levels of controlled drugs for approval by the Executive Yuan to meet the need of management.

1. Application for Licenses

1) In 2004, the Department had issued 1,116 and revoked 750 registration certificates; issued 1,769 and revoked 16 use permits for controlled drugs; issued 732 agreements on manufacturing, 533 import agreements, and 312 export agreements; and approved 364 cases on the use of controlled drugs by medical and pharmaceutical education and research institutes.
2) By the end of 2004, 12,027 companies and organizations had acquired registration certificates for controlled drugs: 563 hospitals, 6,897 clinics, 2,818 pharmacies, 150 western medicine manufacturers, 510 western medicine dealers, 841 veterinarian medical care institutions, 35 animal husbandry institutions, 20 manufacturers of medicines for animal use, 14 dealers of animal medicines, and 185 medical and pharmaceutical education and research institutes. A total of 33,084 use permits for controlled drugs had been issued to: 29,390 physicians, 2,192 dentists, 1,216 veterinarians, and 187 assistant veterinarians. The distribution of registration certificates and use permits for controlled drugs is shown in Figure 8-1.

Table 8-1 Current Status of Registration Licenses for Controlled Drugs

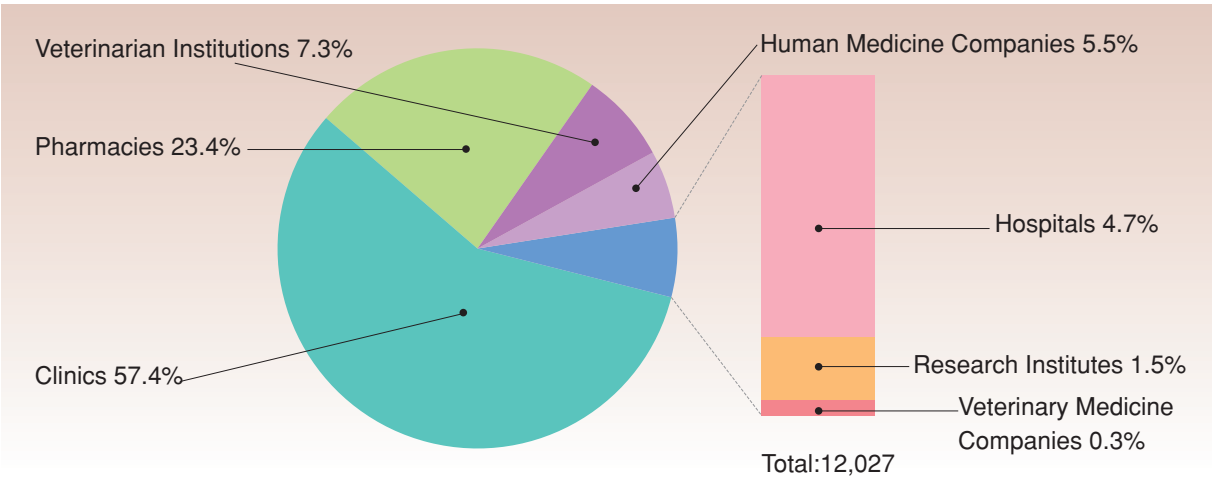
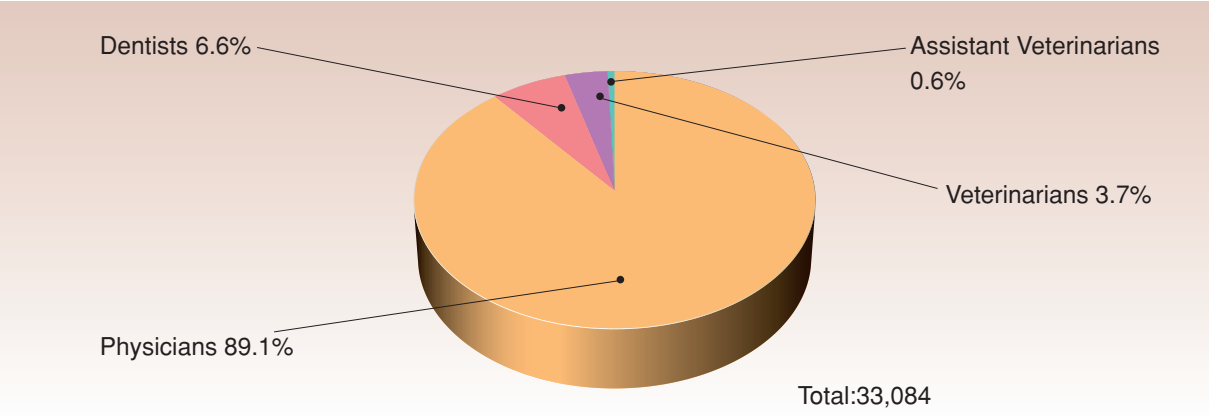


Table 8-2 Current Status of Prescription Licenses Issued for Controlled



2. Formulation of Accompanying Regulations for the Management of Controlled Drugs

1) In coordination with the Administrative Procedures Act, amendments of Article 20, Article 29 and Article 39 of the Controlled Drugs Act were drafted and later passed by the Legislative Yuan on December 24, 2004.
2) To reduce hazards of drug abuse, and to consider the introduction of maintenance treatment, the use of level-3 controlled drugs for the cure of drug addiction should be approved. To understand the trend of drug abuse for early prevention, relevant regulations concerning the monitoring and reporting systems of drug abuse were added. Draft for the amendment of relevant articles of the Controlled Drugs Act had been completed.
3) At the 10th, 11th and 12th meetings of the Controlled Drugs Review Committee, it was resolved to add Modafinil, Butophanol and Amineptine as level-4 controlled drugs. For duplication on the original list, Etilamfetamine as a level-4 controlled drug was deleted. The matter was approved by the Executive Yuan.
4) The balance, transfer and destruction of controlled drugs in the possession of veterinarian medical care institutions, husbandry institutions, manufacturers and dealers of medicines for animal use for reasons of changes, suspension and termination of operation involve different competent authorities in health, agriculture and industry, they must be reported to competent authorities, the Department of Health, the Council of Agriculture and the Ministry of Economic Affairs, for approval. To simplify the administrative procedures, the Bureau of Controlled Drugs of the Department, in accordance with regulations of Paragraph 3 of Article 16 and Article 30 of the Controlled Drugs Act, announced on May 11, 2004, that the changes, suspension and termination of operation of veterinarian medical care institutions, husbandry institutions, manufacturers and dealers of medicines for animal use shall be handled jointly by the competent authorities in agriculture, industry and health of the county/city government to prevent the abuse of controlled drugs.

3. Education on Controlled Drug Laws

1) In 2004, 56 training courses had been organized for 3,322 controlled drug management personnel including pharmacists, veterinarians, assistant pharmacists, physicians, dentists, assistant veterinarians, researchers of research institutes and administrators. A teaching manual, Practice of Controlled Drug Management, has been compiled and distributed to the participants.
2) The Bureau and the local training centers of the Central Personnel Administration, the Executive Yuan, jointly developed an online course on Laws and Regulations Related to Controlled Drug

Management. The course began on November 15 to offer to the public and relevant management personnel online information for learning.

2. Auditing and Inspection of Controlled Drugs

1. Reporting on the Flow of Controlled Drugs

1) The Internet media are used for the reporting of the balance of controlled drugs. By the end of 2004, 25% of the institutions and 85% of dealers had been in use of the media for reporting. In total, 20,803 annual and semi-annual reports from institutions, and 7,583 monthly reports from dealers had been received. The rest institutions and dealers reported by documents. They are stored in computer databanks to check flows. Institutions and dealers suspected of abnormal flows or not reporting in time are made primary targets for inspection to strengthen their inspections.
2) In June 2004, all institutions and dealers in possession of registration certificates for controlled drugs were notified to file by July their reports on the balance of level-1 through level-3 controlled drugs for the first half of the year. In December of the year, 11,299 institutions and dealers were notified to file their reports on the balance of level-1 through level-3 controlled drugs for the second half of 2004 and the balance of level-4 controlled drugs for the year 2004. The flows and operational procedures of media reporting were explained in detail to help dealers and institutions use the Internet media for reporting, and thus to control the flow of controlled drugs.
3) By the reports of institutions and dealers, the amount of Benzodiazepines used in the Taiwan Area in 2002 and 2003 was tabulated. The per 1,000 population of the defined daily doses (DDD) per thousand inhabitants per day dosage showed that the use of the medicine had increased in 2003.

2. Inspection, Management and Review of Controlled Drugs

1) A work plan, 2004 Inspection and Management of Controlled Drugs, was formulated for action by local health bureaus. In coordination with actual needs, more inspection plans, Special Project on Strengthened Inspection of Level-1 and Level-2 Controlled Drugs for 2004, Strengthening of Inspection on Controlled Drugs and Education against Drug Abuse during Summer Vacation for 2004, Special Project on the Fourth Joint Inspection of Illegal Medicines and Foods in 2004, have been formulated to intensify on-site inspections of controlled drugs.
2) In 2004, the Bureau, together with local health bureaus, had inspected 1,409 priority dealers and institutions to find 143 (accounting for 10.15% of the total) in violation of regulations. The Bureau had also supervised local health bureaus to inspect 14,272 general dealers and institutions to find 39 (0.27%) in violation. They were handled according to laws and regulations.
3) In 2004, 23 illegal advertisements for the sales of controlled drugs on the Internet had been found. They had been referred to the police authorities for investigation and action.
4) A set of Guidelines for Benzodiazepines Using in Sedation and Hypnosis for the reference of clinical physicians was formulated and announced on March 16, 2004 to protect the safe use of drugs of the public.
5) Three meetings of the Review Committee on Medical Use of Controlled Drugs of the Department were held. These meetings reviewed the long-term use of anesthetics by 71 non-cancer patients, and nine cases involving the justifiability of the use of controlled drugs. Those who had unrightfully used controlled drugs were punished in accordance with the decisions of the Review Committee to prevent drug abuse.

3. Training in the Inspection of Controlled Drugs

A workshop on matters concerning management of controlled drugs was held on May 27 and 28, 2004, for 119 controlled drug management and inspection personnel of health bureaus and health stations. Laws and regulations were explained;

preparation of interview records was taught; and practices of inspection were illustrated.

3. Prevention of Drug Abuse

Drug abuse causes immense damage to the nation, society and families. Taiwan is located in the hub of Asia in the middle of oceans with convenient transportation leading to the drug-producing neighboring countries. Drugs are trafficking in unceasingly. In 1994, the Executive Yuan instructed ministries and councils concerned, with the Ministry of Justice, Ministry of Education and the Department as the leading actors, to act on three areas of drug control, cracking down on drugs, refusal of drugs and drug cessation, with the goals of cutting off supplies and reducing demands to minimize hazards of drugs on the population.

1. Drug Abuse Monitoring and Reporting

1) Collaboration between the reporting units and the DOH-designated drug addiction medical care institutions, private sector anti-drug groups and drug counseling laboratories has been expanded and strengthened.
2) A reporting information system on abuse of controlled drugs has been established to promote the reporting of drug abuse by electronic means through the Internet to provide real-time and efficient services. This system is also equipped with alarming functions, and offers online inquiry functions to health bureaus to understand at any time the trends of drug abuse. To share resources, the toxicity of 259 items of level-1 through level-4 controlled drugs has been posted on the system for the searching of users.
3) The Reporting System shows that in the period between January and December 2004, 12,145 cases of drug abuse had been reported by psychiatric medical care institutions throughout the country, an increase of 3,862 cases over the same period of the previous year. The five most abused drugs are: heroin (94.5%), methamphetamine (21.9%), benzodiazepines (3.2%), MDMA (0.8%) and glue (0.6%). Compared with the previous year, the abuse of benzodiazepines, MDMA and glue had decreased; whereas the abuse of heroin and methamphetamine had increased. At present, heroin and methamphetamine are the most abused drugs and there is a tendency of continuing increase year by year.

2. Education on the Prevention of Drug Abuse

1) Use of Various Media for Public Education
   (1) Teaching materials on the prevention of drug abuse, 5,000 copies for the February edition and 7,000 copies for the July edition, posters, “Ms. Yang, the 2004 Anti-Drug Ambassador”, leaflets, videos and booklets have been produced. In 2004, 205,408 pieces of leaflets, 9,759 copies of posters, 71,695 book markers, and 39,326 copies of booklets had been distributed.
   (2) Accessibility to educational services has been made more convenient. Real-time application online is made available. In collaboration with the local training centers of the Central Personnel Administration, the Executive Yuan, a course on Hazards and Control of Drugs Commonly Abused, has been posted online for the public and the government officials to learn more about drug abuse.
   (3) Two short films have been produced and shown on TVs and theaters throughout the country. Two 30-second commercials are broadcast on radios. Press conferences are held; and campaigns and large-scale activities are organized.
   (4) Press and TVs are used to brief the public on the activities of the Bureau, and the anti-drug concepts. Government publications, the DOH Newsletter for instance, are used extensively to advocate the anti-drug concepts and to report activities of the Bureau.
   (5) The Internet media are used to promote anti-drug activities to reach adolescents. Book markers of TV celebrities are produced in large quantity for distribution to adolescents.
2) Training

(1) Training of trainers: training courses had been organized by region for health and medical personnel of local health bureaus, health stations, medical care institutions, offshore island health stations, school supervisors, military supervisors and medical personnel, police, coast guards, jail guards and investigators, in total, 627 of them. Their knowledge of drug abuse had improved from 55% to 86%.

(2) The 249 community pharmacists of the drug abuse prevention counseling stations are used to provide community residents with counseling and education. 63 courses on anti-drug have been organized for ministries and councils concerned, associations, schools, medical care institutions and private sector organizations.

(3) In coordination with the selection and services of youth health ambassador activity, youth anti-drug teams have been organized for anti-drug education in rural areas.

3) Subsidies to Private Sector Organizations

54 private groups have been subsidized to organize some 2,500 sessions of anti-drug activities for prison inmates, trainers and volunteers, and high-risk groups.

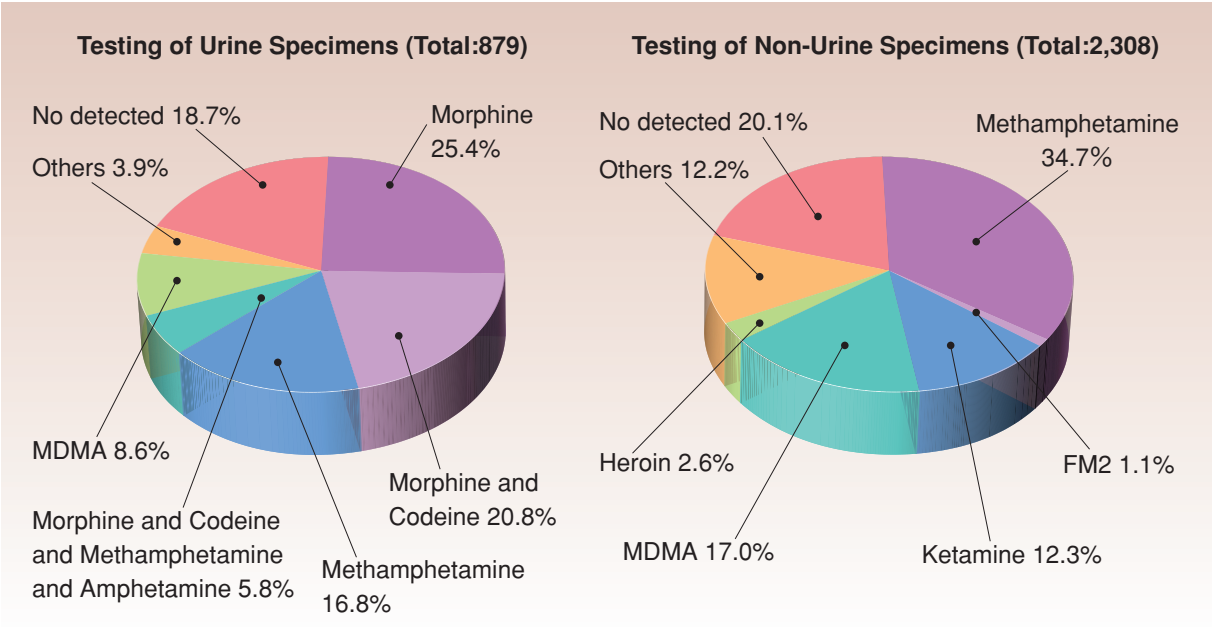
4. Laboratory Testing, Certification and Toxicity Assessment

1. Laboratory Testing for Abused Drugs

In accordance with the anti-drug policy, the Bureau conducts testing or re-testing of abused drugs or urine specimens commissioned by judicial, prosecutorial, police and health agencies. The Bureau also develops laboratory testing methods for abused drugs; and through the testing of drug abuse cases of all kinds, to monitor emerging abused drugs and to understand the new trends in drug abuse.

1) In 2004, 3,187 specimens had been tested; an increase of 49.6% over the 2,130 specimens of 2003. Findings are shown in Figure 8-2. Of them, 879 were urine specimens; and 2,308 were non-urine specimens. Of the urine specimens, more were found of morphine, accounting for 25.4% (223 cases); then morphine and codeine together (20.8%); and then, methamphetamine (16.8%).

Figure 8-3 Laboratory Testing of Urine and Non-Urine Specimens for Drug Abuse, 2004



2) Of the non-urine specimens, more were found of methamphetamine, accounting for 34.7% (801 cases); then MDMA (393 cases, 17.0%); and then, Ketamine (282 cases, 12.3%).

2. Certification of Urine Drug Testing

1) Regulations Concerning the Certification of Urine Drug Testing

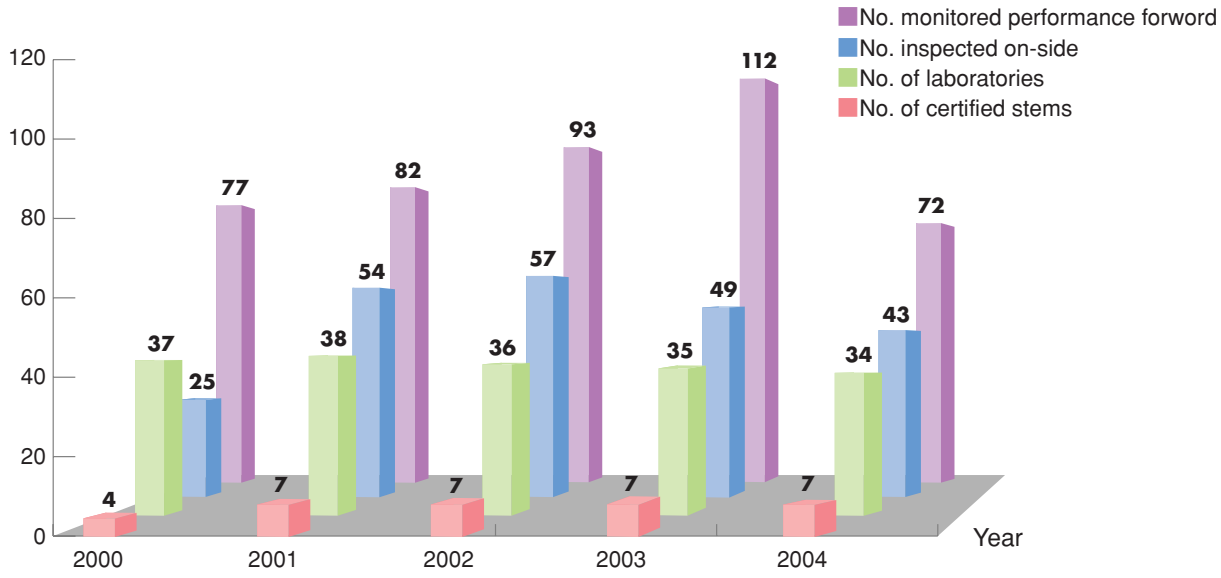
(1) To unify standards, to upgrade the quality of laboratory testing, and in accordance with the needs of prosecutorial, police and judicial authorities as well as other designated persons and institutions for the screening of abused drugs in urine, the Department announced in 1995 regulations governing certification of laboratories; and in 2003, formulated and announced three regulations, Regulations Governing Certification and Management of Medical Care Institutions and Laboratories for Testing Abused Drugs in Urine, Standards on the Establishment of Testing Laboratories for Abused Drugs in Urine in Government Organizations, and Operational Standards for the Laboratory Testing of Abused Drugs in Urine.

(2) In 2004, the Operational Standards for the Laboratory Testing of Abused Drugs in Urine was amended to include Ketamine metabolites as an item for preliminary and confirmation testing and their cut-off values. Amendment was also made to accept preliminary testing of abused drugs by any adequate analysis methods.

2) Certification and Management of Laboratory Institutions for the Testing of Abused Drugs in Urine

(1) Since 1998, the Department has conducted certification of laboratory institutions for the testing of abused drugs in urine specimens. Thus far, 12 laboratories have been certified and managed by the Bureau of Controlled Drugs. The purpose is to meet needs of testing to provide accurate and quick testing services. Most health bureaus have allocated manpower and facilities to support local police and prosecutorial authorities in the screening of amphetamine and morphine in urine specimens. In 2004, some 38,000 specimens had been tested.

Figure 8-4 Management of Laboratory Institutions for Testing of Urine Specimens for Drug Abuse



(2) The 12 certified laboratories are capable of preliminary testing and confirmation testing by gas chromatography/mass spectrometry method of amphetamine, methamphetamine, morphine and codeine in urine. 11 laboratories have been certified for the testing of MDMA and MDA; and 10 are certified for the testing of marijuana. In 2004, a total of 120,000 urine specimens referred by judicial, prosecutorial and police authorities and other designated persons and institutions had been tested. Upon future needs, more items for the testing of abused drugs in urine will be added to meet the demands for drug testing.

(3) To assure the quality of urine drug testing, quality of certified laboratories are monitored, once every three months for work performance, and once every six months of on-site inspection. Application for new certified items should go through three performance assessments and one on-site assessment. For local health bureaus, one performance monitoring and one on-site assessment per year are made to monitor their quality. Achievements in the quality monitoring of laboratory testing institutions are shown in Figure 8-3.

3. Toxicity Assessment of Abused Drugs

Information on the toxicity of controlled drugs and abused drugs is collected, categorized and filed. Toxicity information of 259 items of schedule-1 through schedule-4 controlled drugs has been collected and stored in the Bureau's Information Services of the Reporting Information System on Abuse of Controlled Drugs for searching by all. In 2004, a research project, The Relationship study between the relationship study between methamphetamine induced mutation and biological hazard, was conducted.

IX. Development of Chinese Medicine and Pharmacy

IX. Development of Chinese Medicine and Pharmacy

The World Health Organization published for the first time an epoch-making 80-page professional report, "Global Strategies on Traditional Medicines, 2002-2005", to urge member states to integrate traditional medicines in the existing medical care policies, and to establish full-time institutions to be responsible for the implementation. Later in 2004, the WHO published another report, "Global Strategies on Traditional Medicines, 2004-2007", to explicitly stipulate that traditional medicines be integrated in the national medical care policies. Taiwan, realizing this trend of development in advance, established on November 1, 1995, an organization fully responsible for the management of traditional medicines, the Committee on Chinese Medicine and Pharmacy, to promote the development of Chinese medicine and pharmacy.

1. Administration of Chinese Medicine

1. Manpower Development

The training of doctors of Chinese medicine in Taiwan comes in a seven-year program (extended to eight years in 1996), and a five-year post-baccalaureate program. The number of Chinese medicine doctors trained is shown in Table 9-1.

In addition, medical doctors who have acquired the 45 required credits in Chinese medicine can also take the Chinese medicine doctor examination. By the end of 2004, 339 doctors had acquired the required credits; and 86 of them had passed the examination.

To select among individuals who have knowledge of Chinese medicine and pharmacy to practice Chinese medicine, the Ministry of Examination holds qualifying examinations and special examinations for them. By the end of 2004, 19,683 persons had passed the qualifying examination for Chinese medicine doctors, and 3,199 had passed the special examination for Chinese medicine doctors. To promote the normal development of education in Chinese medicine and to improve the ratio of Chinese medicine doctors trained via regular education, the qualifying examination for Chinese medicine doctors will be discontinued in 2008, and the special examination will be discontinued in 2011.

2. Development of Medical Care Institutions and Upgrading of their Quality

1) To assure safety of medical care by Chinese medicine, and to avoid any adverse incidents in med-

Table 9-1 Development of Chinese Medicine Manpower

Dept. Name	School Name	Length of Program (years)	Years of Operation	No. of New Students Annually	No. of Graduates (accumulated)	No. Students passing Qualifying Exam
Chinese Medicine	China Medical U.	7	1966~1995	120	2,799	2,341
		8	1996~today	120	112	7
Chinese Medicine	Chang Gung U.	8	1998~today	50	0	0
Post-Baccalaureate Chinese Medicine	China Medical U.	5	1984~today	100	1,153	901

Table 9-2 Institutions Providing Chinese Medicine Care

Area	Hospitals	Clinic Joint Clinics	Departments of Western Medicine Hospitals	Total
Taiwan Province	25	2,185	55	2,265
Taipei City	6	342	14	362
Kaohsiung City	5	202	3	210
Kinmen	0	3	0	3
Total	36	2,732	72	2,840

Note : 1. Unit:No. of institutions
2. As of December 2004

ical care, a set of Reference Guidelines on Safe Operation in Chinese Medicine Medical Care Institutions, has been announced for all Chinese medicine medical care institutions to follow to upgrade the quality of medical care by Chinese medicine.

2) To offer the public access to complete medical care services through the integration of Chinese and western medicines, and to assure the effectiveness of treatment by Chinese medicine and thus to elevate the quality of medical care by Chinese medicine, a clinical efficacy assessment system for Chinese medicine has been implemented. In the 126 hospitals accredited as teaching hospitals jointly by the Ministry of Education and the Department in 1999 through 2003, 59 have set up Chinese medicine departments (sections): 10 medical centers, 36 regional teaching hospitals, and 13 district teaching hospitals.

3) A project, Establishment of a Comprehensive Clinical Teaching System in Chinese Medicine, has been implemented to promote the clinical training of Chinese medicine personnel and thus to strengthen the clinical teaching environment for Chinese medicine.

4) Continuing education for Chinese medicine doctors has been offered; symposiums on the integration of Chinese and western medicines have been held; training programs for nurses in Chinese medicine care have been implemented to upgrade the quality of medical personnel in Chinese medicine. In collaboration with the Ministry of Examination, training in basic medical sciences and clinical practice has been offered to individuals who are qualified by the special examination for Chinese medicine doctors to improve their quality.

5) The Taiwan Chinese Medicine Nurses Association and the Chinese medicine hospitals have been supervised to organize training for nursing personnel in Chinese medicine care. Opportunities have been made available for nursing personnel of medical care institutions to learn about the basic theories of Chinese medicine and principles on dialectical nursing care.

3. Administration

1) Upgrading the practice quality of doctors and nursing personnel in Chinese medicine
   (1) Continuing education and experience-sharing academic symposiums have been organized for 14 times for 3,154 doctors, accounting for 78.5% of all practicing Chinese medicine doctors.
   (2) 14 symposiums on the integration of Chinese and western medicines have been organized for 2,624 doctors, accounting for 61.6% of all practicing Chinese medicine doctors.
   (3) Training courses have been organized for 708 nursing personnel in Chinese medicine, accounting for 56.1% of nursing personnel in Chinese medicine hospitals.

2) Booklets, Collection of Laws and Regulations Concerning Management of Chinese Medicine

Care, Outlines of Chinese Medicine Administration, and Collection of the Physician's Act and Related Laws and Regulations, have been published, and the Medical Care Act has been amended to publicize government policies.

3) The Association of Chinese Medicine Doctors has been supervised to implement the global budget system and the quality assurance plans of the National Health Insurance; and workshops and meetings have been held by region for key staffs to reasonably contain medical costs, to improve the professional autonomy of Chinese medicine, to assure the medical care quality of Chinese medicine, and thus to promote the everlasting management of the National Health Insurance.
4) By the end of 2004, there were 4,266 Chinese medicine doctors in practice in 2,768 medical care institutions of Chinese medicine, as shown in Table 9-3.

2. Management of Chinese Pharmacy

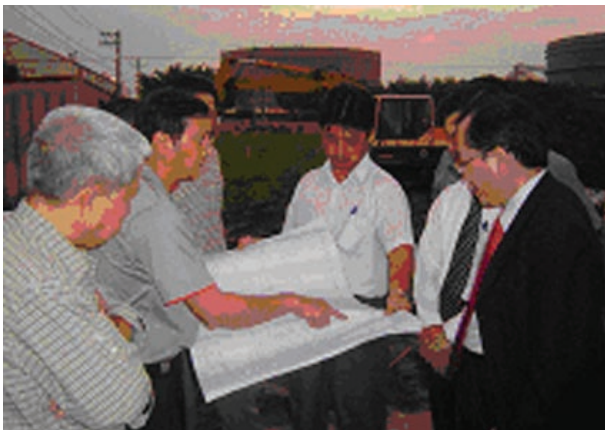
As people have a historical affection for Chinese medicines and Chinese medicines have played a part in nationalism, it is a burning task to establish an environment that can ensure the health of the people and free them from fear in the use of Chinese medicines as they have wished and hoped. At present, the whole world is craving for herbal medicines. At the same time, Taiwan is undergoing drastic economic transformation. While the environments in other fields are pending to be established, to boost the country's international competitiveness, the establishment of scientific assessment standards and a technological platform for Chinese medicines, and thus to promote the development of Chinese medicine industries, to innovate on the technology, and to develop training of multi-faceted professionals are some of the immediate goals in the management of Chinese pharmacy.

1. Establishing a Safe Environment for the Use of Chinese Medicines

1) To boost the country's international competitiveness, to establish scientific assessment standards and related technological platforms, to promote the development of Chinese medicine industries, and to innovate on the technology and create an environment favorable for the development of multi-faceted professionals, in 2004, a five-year (2004-2008) plan for the Establishment of a Safe Environment for the Use of Chinese Medicines was activated. The plan intends to integrate basic research and development to create fortunes through information economies and to assure the safe use of drugs of the population. The plan is for five years to implement 15 projects. In the first year (2004), five projects on the establishment of a domestic quality control center for Chinese medicines to promote recognition by international quality control centers, the establishment of an Asia-Pacific center for the supply of Chinese medicine standards, the establishment of a law application, inspection and education center, the establishment of a manpower development center, and the establishment of an information center on the safe use of Chinese herbal medicines. An administration center on the implementation of the five-year plan has been set up in the Committee on Chinese Medicine and Pharmacy. In addition, 13 projects have been subsidized.
2) In 2004, some preliminary planning for a mechanism on the international recognition of domestic laboratory testing had been completed. The extracts and isolation of index ingredient standards from Chinese medicine materials had been completed for 30 some items. Some remarkable achievements had also been made in the modernization of Chinese medicine pharmacies, and the organization of training courses and workshops.

2. Improving the Quality and Safety of Chinese Medicines

1) Efforts will continue to be made in establishing databanks for the raw materials of Chinese medicines to assure their accuracy. At the same time, the economic values of certain medicinal plants unique to Taiwan will be developed. Standards of concoction will be developed to reduce their toxic-



ity and improve the release of active ingredients. Items for the packaging of Chinese medicine materials have been increased. Surveys and workshops are held to rectify the habits of Chinese medicine workers to prevent the mixed and wrong use of Chinese medicines.

2) To further protect the safe use of drugs of the people, findings of the general testing and quantitative testing that have been conducted in the past years on residues of agricultural pesticides, contents of heavy metals, microbes and alfatoxins, improper fumigation with sulfur causing the leftover of sulfur dioxide, addition of antiseptics, aristolochic acid, general inspection and content test etc..., totaling 203 items of Chinese medicine materials were compiled in a Chinese Medicine Pharmacopoeia and published on March 9, 2004, effective on May 1, 2004. They provide bases for the testing methods and specifications of Chinese medicine materials.

3. Upgrading Professional Skills to Assure Quality and Safety

Efforts have been continued to organize workshops on the mixed and wrong use of baseline Chinese medicine materials, and also workshops on the HPLC quantitative analysis and GMP, to help relevant professional workers fully understand the concepts of quality control and quality assurance, and also ways to prevent cross-contamination in the process of manufacturing. To promote the modernization of Chinese medicine pharmacies, and to improve the management quality of Chinese medicine dealers, the concepts of health promotion and modern business management will be made part of the training programs in the future.

4. Promoting GMP in Conventional Chinese Medicine Manufacturers

1) The Committee on Chinese Medicine and Pharmacy has spared no efforts in the past years to promote the practice of GMP in conventional Chinese medicine factories. It is considered imperative that these factories practice the GMP; and the five-year plan for the overall practice of GMP by manufacturers will reach the end by March 1, 2005. Through the project, Supervision of Conventional Chinese Medicine Manufacturers to Upgrade Quality of Manufacturing and to Assure Safe Use of Drugs under the Five-Year Plan for the Establishment of a Safe Environment for the Use of Chinese Medicines, inspections of these factories have been made by stage. The Chairman of the Committee has made personal visits to 73 conventional Chinese medicine factories, held nine meetings and symposiums on the manufacturing process and quality control of conventional Chinese medicine factories in the practice of GMP. Preliminarily, 30 some factories have expressed the willingness to practice GMP; four have passed the review of the GMP hardware; 90 have passed the review of the GMP software; and the rest are told to entrust the manufacturing of their products to other manufacturers. A

book, Conventional Chinese Medicine Manufacturers in the Practice of GMP, has been published.

2) While promoting the universal practice of GMP by pharmaceutical manufacturers, establishing scientific standards for assessment, and developing relevant technological platforms, in order to promote policies and for experience-sharing, the Committee has published a series of books on the establishment of a safe environment for the use of Chinese medicines, "Establishing a Safe Environment for the Use of Chinese Medicines in Taiwan", and "Practice of Chinese Medicine and "GMP Chinese medicine slices factories and Chinese medicine seller practice", Factories and Chinese Medicine Dealers", have been published for the reference of industries, governments, academics and research institutes.

5. Strengthening Inspections and Punishment of Illegal Medicines and Advertisements in Violation of Regulations

1) By the end of 2004, 1,476 cases of advertisements in violation of regulations and 117 illegal medicines had been reported and referred to for action, including 652 advertisements on Chinese medicines in violation of regulations and 92 illegal medicines for action by local health agencies. Local health agencies had also detected 33 advertisements in violation of regulations and 109 illegal medicines.

2) To realize the management of Chinese medicines, to interrupt the flow of illegal medicines, to follow-up the Chinese medicines on market inspected and spot-checked by local health bureaus, and to follow-up the development of the advertisements in violation of regulations monitored at their own initiative by the Consumers' Association, the Government Information Office and the Fair Trade Council of the Executive Yuan, a Recording System of Cases of Illegal Chinese Medicines has been established. Since the System was put online on September 15, 2004, all health bureaus in the 25 counties and cities have applied for the online use (including 103 staff members; 432 cases are recorded for management). Suspected cases are followed-up throughout the country; and cases closed are used as a reference for the processing of other cases.

3) The System is equipped with several convenient statistical functions to allow county/city health bureaus and health stations, and the Committee on Chinese Medicine and Pharmacy as well, to understand at any time the handling of illegal cases in counties and cities and throughout the country for the reference of policy-making. The development of this System helps in the establishment of a common national platform for the management of illegal cases, and thus resolves the common problems of the county/city health bureaus and health stations for years.

6. Strengthening Clinical Trials of Chinese Medicines and their Legal Environment

1) Establishing an Environment and Operational Mechanism for Clinical Trials

(1) The Department began in 2001 to implement a plan for the Establishment of Clinical Centers for Chinese Medicines in Teaching Hospitals to integrate resources and formulate standards, and to establish relevant standard operational procedures for clinical trials. Thus far, subsidies have been made to 12 hospitals, the Tri-Service General Hospital, National Taiwan University Hospital, Taipei Veterans' General Hospital, Linkou Chang Gung Memorial Hospital, China Medical University Hospital, Taichung Veterans' General Hospital, Hsiu Chuan Hospital, Chi Mei Hospital, National Cheng Kung University Hospital, DOH Taoyuan Hospital, Chungshan Medical University Hospital, and Kaohsiung Medical University Hospital. By the end of 2004, these centers had accepted 19 requests for clinical trials by industries, and conducted 25 cases on the efficacy assessment of some traditional preparations.

(2) Environment and facilities favorable to the development of clinical trials of Chinese medi-

cines have been set up; a joint website of the centers for the clinical trials of Chinese medicines has been established to provide information on laws and regulations related to the research and development of new drugs. Information on the clinical trial centers established under subsidies from the Department also appears on the website.

2) Training in the Clinical Trials on Chinese Medicines

(1) Medical manpower for the clinical trials on Chinese herbal medicines has been developed; physicians, Chinese medicine doctors, pharmacists, nurses, statisticians and related researchers have been helped develop correct concept toward clinical trials, and thus to upgrade the quality of clinical trials on Chinese medicines. Since the first Training Program in Clinical Trials on Chinese Medicines was initiated in 2001, training programs have been organized for more than 1,200 person-times each year.

(2) In 2004, a symposium, International Regulations Governing Plant Products and their Market Trends, was held. Dr Konstantin Keller, President of the EMEA Plant Medicines Management Council of Germany, Dr Hubertus Cranz of Belgium, and Dr Hiroyuki Nishiwaki of Japan, were invited as keynote speakers. They offered valuable recommendations and shared experience on the issues of how Taiwan's pharmaceutical manufacturers, on the existing technological platform, follow the international trends of research and development in plant products, and thus to lay foundations for competition.

3) Establishing Legal Environment and Clinical Trial Standards for New Chinese Medicines

The Standards of the Clinical Trials of Chinese Medicines on Liver Diseases, and Standards of the Clinical Trials of Chinese Medicines on Osteoporosis, as well as IND and NDA drafts have been completed, hoping that industries will take into consideration relevant laws and regulations from the beginning of the development of a new Chinese medicine. They also provide basis for the application for the clinical trials of new Chinese medicines and their registration and market approval.

4) Strengthening the Reporting System for Adverse Reactions of Chinese Medicines

Efforts have been continued to implement the Reporting System for Adverse Reactions of Chinese Medicines. Training programs have been organized for medical and nursing personnel to strengthen the reporting. Cases reported are analyzed and assessed. Databanks and the website of the national reporting system for adverse reactions of Chinese herbal medicines have been updated and enriched to attain the goal of safe use of drugs.

3. Research and Development in Chinese Medicine and Pharmacy

To promote the modernization and scientific study of Chinese medicine and pharmacy, and to provide a scientific basis for the formulation of policies concerning Chinese medicine and pharmacy as well as measures for resolving major health problems with the aim of upgrading the technological levels of medical care services by Chinese medicine, in 2004, the Department commissioned academic institutions to conduct 81 research and development projects involving Chinese medicine and pharmacy.

1. Studies on the Clinical Efficacy of Chinese Medicine and Policy Analysis

To assess the clinical efficacy of Chinese medicine and pharmacy on specific diseases, the Department has, for years, entrusted health and medical academic institutions to conduct related research. In 2004, studies focused on some common diseases of the population, cancer and allergic asthma, such as study on the clinical efficacy of anti-allergy compound on allergic rhinitis. In 2004, nine projects related to the clinical studies of Chinese medicine had been conducted.

To promote the development, establishment and monitoring of indexes on the quality of Chinese

medicine outpatient care, the Department has also entrusted institutions to conduct studies such as, Apply service quality gap theory to estabilish the quality indicators and evaluate the service quality for Chinese medicine, and nosocomic infection control in medical care institutions of Chinese medicine, hoping to quantify assessment and thus to upgrade the quality of medical care by Chinese medicine.

To assess the impact of the National Health Insurance on Chinese medicine, research projects such as, Survey of the Approval Rate of Chinese Medicine Doctors on the Global Budget Payment System for the Outpatient Care by Chinese Medicine, have been commissioned out. Other research projects such as, Establishment of Indexes to Assess the Efficacy of Chinese Medicine and Pharmacy on Life Quality, have also been commissioned out to collect evidence on the positive impact of Chinese medicine and pharmacy on life quality.

2. Studies on the Diagnostic Criteria and Guidelines for Clinical Treatment

In response to the global budget system for Chinese medicine outpatient care implemented in July 2000, to assess the impact of the payment system on the quality of medical care services, and to enhance the accuracy of diagnostic analysis of diseases by Chinese medicine, in 2004, nine research projects such as, study on the efficacy of Chinese medicine in the acute stage of hemorrhagic cerebrostroke, compilation of a manual on the dermatology clinical care by Chinese medicine, and study on the development of a new generation automatic Sphygmography, had been conducted.

3. Research Related to the Quality Control of Chinese Medicines

To contain the CITES impact, and to sustain the everlasting use of the active properties of protected medicinal materials, in 2004, research projects such as, development of medicinal plants and preservation of seeds, and study on the selection and breeding of indigenous medicinal herbs and their organic farming, had been conducted.

To strengthen the management of Chinese medicine products, and to upgrade the quality of Chinese medicines, research projects such as, study on the concoction of processing of Atractylodis Rhizoma, and studies on the analysis method in preparations of TCM by HPLC, had been conducted to provide references for the appraisal of Chinese medicine materials, the establishment of standard products, laboratory testing, toxicity detection, concoction methods and management policies of Chinese medicines. In 2004, 15 projects related to the quality control of Chinese medicines had been commissioned out.

4. Genomic Studies of Chinese Medicine and Pharmacy

In coordination with the implementation of the "Challenge 2008: National Priority Development Plan", the Department is actively promoting a research plan related to the genomic study of Chinese medicines under the National Genome Medicine Science and Technology Plan. In 2004, research projects such as, The viewpoints of depression from Chinese and Western medicine: Exploring the relationship among patterns of Chinese Medicine, genotypes and clinical manipestation, had been commissioned out to promote the evidence-based diagnostic methods of Chinese medicine. A training program, Development of Chinese Medicine and Pharmacy Manpower II-Genomic Study on Chinese Medicine and Pharmacy and Training in Core Technologies, had also been organized.

The Department has also commissioned out research projects such as, Constructing a Chinese Medicine Molecular Analysis plateform by utilizing cDNA microarray, to confirm the sources of seeds and distinguish the nature of the Chinese medicinal materials and thus to safeguard the safe use of drugs. In 2004, 14 research projects related to the genomic studies of Chinese medicine and pharmacy had been commissioned out.

5. Exchange with Mainland China and Other Countries

To raise the status of Taiwan's traditional medicine in the world, symposiums for the two sides of

the Strait and the international organizations such as, the 2004 Symposium on Chinese Medicine and Pharmacy on the Two Sides of the Strait, the 2004 7th Symposium on the Engineering Technology and their Application in Chinese and Western Medicines, 2004 International Symposium for wenbing Theory, Symposium on Nursing Care by Chinese Medicine in the Three Areas across the Strait, Development and Prospects on the Integration of Chinese and Western Medicines in Medical Care, the 19th Symposium on Natural Medicinal Substances, Forum on the Promotion of Technological Education for Chinese Herbal Medicine Industries, follow-up meeting of the International Symposium on Biological Technology-Roundtable Meeting for the Biotechnology Industries in Chinese Herbal Medicines, had been held.

To share with others research findings, a Presentation Meeting on Research Findings Related to Chinese Medicine and Pharmacy was held by the Committee on Chinese Medicine and Pharmacy on November 13 and 14, 2004.

To promote cross-Strait exchanges of Chinese medicine and pharmacy at the private level, in 2004, subsidies had been made to two research projects, Specifications on Concoction, GMP and Management of Chinese Medicine Affairs on the Two Sides of the Strait-Similarities and Differences, and Study Tour on the Science and Technology Management of Chinese Medicine and Pharmacy in Mainland China.

6. Research Utilization

To make the maximum application of the findings of research related to Chinese medicine and pharmacy, the Department has put them into a book form. In 2004, the Illustrated Common Medicinal Plants in Taiwan (volumes 2 and 3), and A Guide to the Website on Taiwan's Chinese Medicine and Pharmacy, had been published.

4. Computerization of Chinese Medicine and Pharmacy

1. E-service for Safe Use of Drugs

The website of the Committee on Chinese Medicine and Pharmacy, http://www.ccmp.gov.tw, has for years, through the use of modern information technology, enriched and updated its contents, expanded functions, and issued e-bulletin. The website is open to the public for inquires on the permit licenses of certain Chinese medicines to understand their legal status.

To strengthen the administrative management of Chinese medicine and pharmacy, to improve administrative efficiency, and to realize the policy on safe use of drugs, an information system on advertisements of Chinese medicines has been set up to consolidate standards for the review of advertisements; another information system on the progress of the processing of applications for permit licenses and advertisements to make applications more transparent, and a record system on cases in violation of regulations for effective management have also been set up and made available to the public through e-service, and also to construct a common national operation platform for the management of cases in violation of regulations on Chinese medicines.

2. Computerization of Publications

1) To upgrade the quality of professional workers, to disseminate information on Chinese medicine and pharmacy, to help the public understand correctly the use of Chinese medicine and pharmacy for medication, health promotion and their safe use, the Committee, for years, has published annual reports and other relevant publications. In 2004, the following publications had been produced.
   (1) Development of Chinese Medicine and Pharmacy series (2): Visions of Chinese Medicine and Pharmacy in Taiwan, a Brief Introduction to the Committee on Chinese Medicine and Pharmacy of the Department of Health;
   (2) Development of Chinese Medicine and Pharmacy series (3): Collection of Papers Presented at Academic and Research Utilization Symposiums of the Committee on Chinese Medicine and Pharmacy, the Department of Health, 2002-2003;
   (3) Development of Chinese Medicine and

Pharmacy series (4): Visions of Chinese Medicine and Pharmacy in Taiwan, a Brief Introduction to the Committee on Chinese Medicine and Pharmacy of the Department of Health (in English);

(4) Development of Chinese Medicine and Pharmacy series (5): New Era of Works on Chinese Medicine and Pharmacy;

(5) Annual Report of Chinese Medicine and Pharmacy, No. 22, in 8 volumes.

2) In 2004, academic institutions had been entrusted to conduct two research projects, Analysis of Literature on the Use of Chinese Medicine and Pharmacy for Cosmetics, and Collection of Works on Pulse Diagnosis by Chinese Medicine.

3) To evaluate the efforts in the past in computerizing classical works of Chinese medicine and pharmacy and to plan for future directions, and thus to realize the everlasting development of the computerization of works on Chinese medicine and pharmacy for their popularization and internationalization, a symposium on classical works of Chinese medicine and pharmacy in Taiwan was held. Prior to the symposium, an expert meeting on the development of the computerization of classical works of Chinese medicine and pharmacy was held to reach some consensuses, and to deliberate on the future directions of the computerization work.

X. Health Information

X. Health Information

The main vision of an e-government is to fully utilize information and communications technologies to improve administrative efficiency on one hand to innovate services of the government; and on the other hand, to upgrade the quality of services to the public, to support government restructuring, and thus to march toward a resourceful government for all. Along with the changes of information technology with each passing day, information systems are playing a more important role in the quality of medical care. The Department will, on the basis of the existing "Internet Health Service Promotion Project" (2002-2005), and the "Health Bureau/Health Station Internet Public Service Project" (2003-2006), continue, expand and promote the establishment of the National Health Information Infrastructure (NHII) (2005-2009) to realize the goal of health care for all, to provide a sound environment for the development of health information, to develop local health information manpower, to create new service types of medical information industries, and to upgrade the quality of medical care services.

1. Information Systems for Health Administration

1. Emergency Care Management System

To prevent and control various emergency incidents and accidents, and to reduce the number of injuries, illnesses, disabilities and deaths, the Department completed in 2001 the development of a WEB version Emergency Care Management System. In 2003, an Air Rescue subsystem and a Mass Casualty Emergency Care and Rescue Reporting subsystem were added. In 2004, a system was developed to automatically report via the HIS systems of emergency care responsibility hospitals the number of available ICU and observation beds, and by combining the functions of the geographic information systems on medical care resources, to display immediately the number of ICU and observation beds by department in the area and the neighboring counties and cities. This system is currently used by 419 units including the Department, the firefighting departments, emergency care responsibility hospitals, county and city health bureaus, and county and city disaster rescue commanding centers. These users, by linking to the system, can immediately access to information related to ambulances, responsibility hospitals and emergency care resources to allow disaster rescue commanding centers in all areas to obtain accurate and rapid information for emergency rescue.

2. Information System on Food Sanitation

To face the amendments of relevant laws and regulations and to meet needs for system integration and linking, work began in November 2004 to plan for the revision of the food sanitation management information system. The project is to be completed in October 2005. County and city health bureaus will then be able to proceed with food sanitation management online via the Internet. They can also establish basic information of food industries in their locality, records of inspections, specimens for laboratory testing and management of violations. By integrating the food poisoning information system and the laboratory information system of the Bureau of Food and Drug Analysis, the goal of recording all information concerning food sanitation at one time and shared by all can be reached.

3. Online Public Application Service System

In line with the policy on the promotion of e-government, a system has been set up to allow applications on matters concerning medical affairs, pharmaceutical affairs and foods to be made via Internet online, the download of various application forms, inquiries by applicants on the progress of the processing, and notification for collecting processed

applications. Development of the system was completed in December 2003, and officially put online in 2004, to realize the goal of an e-government of "filing applications in one place, and receiving services all the way".

4. Document Automation

1) The Department's third stage Automated Document Information System provides functions for the production of documents, document flow management, the scanning of documents for filing on optical disks, and electronic document exchange. In 2004, the Department continued to revise and add new functions to the system in meeting the needs for document processing and computerized management of the Department. In the second half of the year, in coordination with the plan to write documents from left to right, functions of the system had further been revised. The system will be fully online in 2005.
2) According to the Guidelines on the Computerized Management of Files by Organizations as contained in the File Act, the Department carried out planning for the development of a file management information system. Document flow management and the scanning of document files on optical disks were integrated, hoping to achieve the goal of electronic file management and to serve as a basis for future opening the file application services. The system was completed in November 2003, and put online in January 2004.
3) The hardware and software of the electronic document exchange center of the Department were installed in 2002. The center was officially in use in February 2003, primarily for the electronic exchange of documents by health agencies to improve administrative efficiency, and to lay a foundation for the electronic and Internet government. In 2004, more action had been taken to promote online document electronic exchange between the Department's affiliated organizations, DOH hospitals, county and city health bureaus, and private hospitals. By the end of 2004, 206 organizations had joined the exchange center. In June of the year, a competition on the electronic exchange of documents was held. Through this virtuous competition, it is hoped that heads of organizations will give more attention and more willingness to use the electronic exchange of documents, and thus to improve the benefits of exchange.
4) Sorting and filing of old documents: In coordination with the implementation of the File Act, the Department's old documents have been sorted again. While the archives are recorded, new files are established. By the end of 2004, some one million documents had been resorted.

5. E-Document System

In coordination with the promotion of the paper-free operation, more electronic and automated approaches have been taken to reduce the use of paper and to improve administrative efficiency. The system was renovated in 2003 and put online in March 2004. The electronic process of the documents was, in coordination with the reorganization of the Department, extended in September of same year to the Central Region Office of the Department.

2. Health Information Network

1. National Health Information Network Infrastructures

To meet the needs for exchange and sharing of medical care information, the construction of regional information centers in Taipei, Taichung and Kaohsiung under the National Health Information Network was completed in 1995 to provide health and medical care institutions with information services on health and medical care. In response to the advancement of the Internet technology, in 2001, the three centers in Taipei, Taichung and Kaohsiung (the RCs) were merged into a single service center (the SC). The public utility systems currently in use under the National Health Information Network include management of medical affairs, emergency care management, management of pharmaceutical affairs, management of food sanitation, management of food poisoning, Pap smear screening for cervical cancer, health and demographic data, online claims

for health insurance medical costs, management of the reporting of communicable diseases, and information on immunization. All these systems are presented in page form and are user friendly.

To continue the construction of the ADSL broad band system in the system, an exchange environment was established in April 2003 for the National Health Information Network and the National Health Insurance Network. In 2004, the NHI-contracted medical care institutions originally in the Health Information Network were supervised to link to the NHI Network to facilitate online claims for health insurance payments. In December 2004, the Epidemic Commanding Center of the Center for Disease Control of the Department was made to use the special government GSN line, and health bureaus were made to use the E1 ADSL to connect to the SC for data transmission, and thus to upgrade the information transmission efficiency of the National Health Information Network.

To improve the security of the National Health Information Network, in June 2004, spare supporting mains were installed in some major information systems; and in December, a real-time separate site spare system and a total spare supporting mains were installed at the Department's terminal of the National Health Information Network, and thus to upgrade the functions of the Department and the National Health Information Network to contain errors and restore disasters, and assure the continuation of program activities. An anti-virus system was installed in each of the information system of the Department and the National Health Information Network to monitor computer hackers, to prevent the Department's network and the National Health Information Network from harassment and attack of computer viruses and hackers. An anti-virus system was installed in the National Health Information Network for 24-hour monitoring of virus activities to remove and isolate potential computer viruses at any time.

A public service website has also been set up to allow users to make inquiries, check on the progress of services, and auditing and management, to effectively manage the application systems, and the maintenance of the quality of the communications lines and equipment of the various organizations linked to the network. The goal is to provide a high quality, highly stable data processing center and transmission channel.

2. Promotion of Electronic Medical Records

To maintain the security of medical records and the privacy of patients, a set of Operational Guidelines on the Implementation of Electronic Medical Records by Medical Care Institutions was formulated by the Department and announced for implementation on March 4, 2004. Provisions have been made to regulate matters concerning electronic signature, prevention of tempering, addition or deletion of records, handling of computer crashes, remote storage of duplicate data, system renewal, medical record duplication, and security auditing. Medical care institutions are asked to assign personnel with adequate training, and hospitals should set up electronic medical record committees to supervise and implement relevant regulations. Medical care institutions meeting the above regulations may be exempt, in whole or in part, from the production of paper medical records, thus improving the efficiency of medical care services, upgrade the quality, and reduce their management costs.

1) Promotion of Electronic Medical Records to All Medical Care Institutions

To thoroughly understand the difficulties and problems encountered by medical care institutions throughout the country and medical information industries in the development of electronic medical records for the future formulation of relevant laws and regulations regarding electronic medical records, and measures, specifications and guidelines concerning their management, technologies, standards, sharing, security and their social impacts, the Department publicly solicited in 2002 a pilot project on the Promotion of Electronic Medical Records by Medical Care Institutions. In 2003, the Department promoted electronic medical records in medical care institutions; and in 2004, a Plan on the Formulation and Promotion of the Basic Format of the Electronic Medical Records was carried out to plan for the basic format of electronic medical records, definitions of

medical terms and promotion strategies to serve as a basis for the promotion of electronic medical records by medical care institutions and the sharing and exchange of information, and thus to expedite the electronic-development of medical care institutions.

2) Establishment and Promotion of a Policy on the Protection of Medical Information Security and Privacy

Under the preconditions of upgrading the quality of medical care services and protecting the rights and interests of information owners as well as the security of personal health information, planning was carried out for the formation of laws and regulations relevant to the protection of the security of medical care information and privacy, and obtain a point of balance between the circulation of medical care information and its security and privacy rights in the sharing of information. In 2002, the Department, through public selection process, commissioned the Science and Technology Law Center of the Institute for Information Industry to carry out a study on the current status of related laws and standards in different countries and, within the time frame of implementation in 2003 to the end of 2005, to conduct an opinion survey among related sectors on the development of educational materials for the promotion of information security and the establishment of prototype strategy, to coordinate the implementation by health and medical care institutions, hospitals and clinics nation-wide. In 2004, the Department commissioned the Taiwan Medical Information Association to conduct relevant work, to maintain the "medical information security and privacy protection" special website, to draft resolutions of expert meetings, and to prepare a set of draft Outlines for Medical Information Security and Privacy Protection.

3. Health Statistics Data Storing and Mining System

The system was established in October 2003 as a data storage for statistical analysis and trend projection focusing on the National Health Insurance databanks of the Department, databanks of medical personnel, databanks of medical institutions, and household data. The system performs multi-dimensional online analysis and simulated statistical projections. In April 2004, the data mining system was set up to serve as a basis for the formulation and promotion of health and medical care policies to reach the objective of decision-making support.

3. Internet Health Services

The Internet Health Services can only be operated in coordination with the legalization of electronic medical records, formulation of electronic medical information standards, the online and linking of laboratory testing information, the sharing of medical record data, the transmission of medical images, online claims for the National Health Insurance payments, tele-medical care, electronic certification of medical care, the protection of privacy, and other peripheral developments. Various health and medical care institutions will then be able to provide relevant services on a fair, reasonable, legal and sharing basis.

1. Establishment and Operation of the Medical Certificate Management Center

To promote the application of electronic medical information and strengthen the protection of the security of medical care information, the Department has set up a Medical Certificate Management Center to provide electronic medical care certificate service. With the use of the electronic signature on the medical certificate IC card, security is enhanced, identification of the transmission source of electronic medical records and integrity of information are assured, and falsehood and post-transmission denials are avoided. In transmitting medical record information on the Internet, through the security functions provided, illegal utilization such as duplication and hijacking of information can be prevented. On June 6, 2003, the Ministry of Economic Affairs approved the Operational Standards of the Medical Certificate Management Center, and the Center began operation officially on June 13. By the end of 2004, 96,666 medical IC-cards had been produced and issued. They have been used in the promotion of e-medical records, and in the systems such as birth reporting on

the Internet of the Bureau of National Health Insurance, and electronic document exchanges between the Department and medical care institutions.

2. Promotion of Medical Care Information Standards

To enhance the universal application of the electronic-development of medical care information, and to realize exchange and circulation of medical care information between medical care institutions, Taiwan joined the International Health Level 7 (HL7) as its 11th member country. The Department has actively promoted medical care information standards. To meet the needs of localizing HL7 and DICOM (Digital Imaging and Communication Medicine) 3.0 standards, to provide medical care institutions with principles in the exchange of medical care information, and to promote circulation and integration of medical care information, the Department had completed the following activities in 2004.

1) Organized the Third Asia-Pacific and Cross-Strait Symposium on the HL7 Information Exchange Standards;
2) Implemented a project on the promotion of the HL7 and DICOM standards on medical care information; thus far, 16 sets of draft standards such as, a "common regulatory manual (draft) on medical care information standards in Taiwan", "regulatory manual (draft) on specifications of HL7/XML preventive health information standards in Taiwan", and "a practical manual on regulations and guidelines (draft) on the quality of medical care images in transmission and management of information security", have been developed;
3) Participated in the DICOM standards committee meetings; in 2004, two such meetings had been attended.

3. Databank of Information on Drug Interaction

Through the integration of information technologies, a comprehensive drug interaction-related databank has been established. Hospitals, clinics and pharmacies have been provided for use with basic information on drugs and their relevant interactions, together with codes of the NHI-covered drugs, and ingredients and generic names of common domestically used drugs to improve safety of drug use and adequacy of prescription, and to reduce chances of drug repetition and costs of the National Health Insurance.

The system provides, in addition to online inquiries by physicians and pharmacists, medical care institutions to cross-check their drug use in hospitals. The system, together with the HIS systems of hospitals, allows the front-line clinicians opportunities for real-time inquiries and alert them to the possibilities of interaction. Since the inauguration of this system in March 2004, 17 medical centers, 24 DOH hospitals, 10 pharmacies, the Bureau of National Health Insurance and its six branch bureaus have participated in. By the end of December, 14,309 person-times had either entered or downloaded information for cross-check.

4. Establishment of a Long-term Care Information Network

To cope with the arrival of the aging society, and in coordination with the Plan for the Establishment of a Long-term Care System of the Executive Yuan, to meet the need for following-up and management of cases, and to follow the international trend of "aging in community", the application of the Internet science and technology in the care system for patients is an urgent necessity. The integration and exchange of information between the two major systems will facilitate home nursing care personnel to maintain positive interaction and communication with patients and relevant people, and to obtain more comprehensive information of the cases and resources, and thus to improve the quality of care.

In 2003, the Department openly solicited professional organizations plans of the framework, blueprints, standards for the long-term care information system, and the establishment of a long-term care information system and its promotion and publicity. In 2004, four systems, the long-term care informa-

tion system, information system for the management of cases in nursing homes, information system for the management of cases in communities, and web linking service system for the preparation of hospital discharge had been completed to continue to promote the computerization of private sector long-term care institutions, to establish databanks, and to integrate and follow-up the development.

5. Awards for Health Information Websites

To ensure the public's access to websites giving correct information, the Department conducted the first assessment and awarding of medical care websites in 2002. Through the assessment, the service contents of the health websites are enriched and improved. In 2004, the activity continued. In addition, the website for awards was revised to become a portal website for health information. Websites that have been awarded for the last years have been compiled for the convenience of the readers.

6. Online Services Offered by Health Bureaus and Health Stations

Since 2002, funds have been made available at the central government level to plan and establish a national health service network to integrate and develop health service information systems of health bureaus and health stations. In 2003 and 2004, the major work was to plan and establish portal websites for health service to enable the public to make online applications or to seek for online health service information; to integrate and establish databanks on the health status of the population; to develop information systems for the management of preventive healthcare services and management of psychiatric patients, the reporting system for suicide prevention, online management systems for the assessment of physical and mental impairments and others, to improve administrative efficiency and the quality of public service. At the same time, work had also been done to develop the document management systems of health bureaus and health stations, their user account application and verification systems, and information management systems to allow staffs of health bureaus to use the Internet information through a single website, and by division of responsibility for management, to access to needed information under a safe mechanism.

7. The Chinese-English Website

To improve the overall service and image of the Department's website, to provide the public with rich information and the best searching service, the Department had completed the revision of the Chinese-English website in 2004. By restructuring the pages and contents, the website is made more readable to the searchers. The website is restructured user-oriented and obstacle-free meeting the assessment criteria of a government website to improve the overall service quality and image of the website.

XI. Health Planning and Research

XI. Health Planning and Research

The promotion of healthcare activities is heavily associated with the health and welfare of the general public. Through all efforts at various stages of healthcare development in Taiwan, the quality of health and medical care has improved significantly that can be seen from the prolongation of life expectancy for both sexes, sharp decline in infant mortality rate, an overall containment of the carrier rate of hepatitis B, the decline in the prevalence of the negative self-evaluation of health by the elderly, and the improvement in the rate of integrated medical care services in mountain areas and offshore islands. The progress in these health indexes positively reflects the achievements in the implementation of healthcare programs. However, along with changes in lifestyles and advancement in science and technology with each passing day, the needs of the public for health have changed at the same time. To ensure the successful implementation of the various healthcare programs, careful planning, active and accurate implementation of these programs, and strict evaluation are most essential to attain the planned goals and benefits, and to meet the needs of the public.

1. Program Planning and Management

1. Planning for 2005-2008 Mid-term Programs

The purpose of mid-term program planning is for the reasonable and effective distribution of resources and also for the strengthening of the planning for mid-term strategies. From the viewpoint of overall development, the Department has decided that the vision for the years 2005 through 2008 is "to promise the people a healthy and safe life". Through analysis of the general environment and trends of development, and priorities of issues, the development goals of the next four years are grasped, and strategies and plans are formulated accordingly. To improve administrative efficiency and promote assessment of program implementation, in accordance with regulations of the "Guidelines for the Assessment of Program Implementation by Organizations Affiliated to the Executive Yuan" and related operational regulations, goals of strategic achievements and assessment indexes under three categories, program activities, manpower, and funds, have been incorporated in these four-year programs to measure the effectiveness of the implementation for a sound management of programs.

2. Management of Major Health Programs and Plans

Programs are adjusted and improved through various stages. In 2004, the practice of "control at three levels; management and evaluation in one" that was started in 2001 was continued. By the importance of programs, scale of funding, and stability of execution, programs are monitored and controlled at three levels by the Executive Yuan, the Department, and affiliated agencies of the Department. Programs are then monitored and controlled in accordance with regulations of the "Notes on the Monitoring and Control of Annual Programs by Organizations Affiliated to the Executive Yuan", "Notes on the Monitoring and Control of Annual Programs by Selected Items by Organizations Affiliated to the Executive Yuan", and other regulations related to program evaluation to, by scientific methods, effectively control the progress of each program and utilization of funds for the effective management of various health programs and plans. Programs of the Department under monitoring in 2004 are shown in Table 11-1.

3. Plan for the Overall Improvement of Service Quality

Action has been taken in accordance with the

Table 11-1 List of Projects Monitored and Managed, Department of Health, 2004

Level Project Title	Project	Duration	Category	Total
By the Executive Yuan	Internet Health Service Promotion	Jan 2001-Dec 2005	Social Development	4
	Internet Public Service Projects of Health Bureaus and Stations	Jan 2002-Dec 2005	Social Development	
	Community-based Healthy Life	Jan 2002-Dec 2007	Social Development	
	Community-based Long-term Care	Jan 2003-Dec 2008	Social Development	
By DOH	Fourth-phase Plan of the Medical Care Network	Jan 2001-Dec 2004	Public Construction	23
	Medical Care Quality Reconstruction in Post-SARS Period	Jan 2004-Dec 2004	Social Development	
	Safe Use of Drug and Error Elimination	Jan 2004-Dec 2007	Social Development	
	Establishment of Clinical Trial System and Operational Mechanism for New Drugs	Jul 1999-Jun 2004	Social Development	
	Promotion of GMP for Pharmaceuticals and International Mutual Recognition	Jul 1999-Jun 2004	Social Development	
	Establishment of National Drug Identification System	Jan 2001-Dec 2005	Social Development	
	Mid-term Plan to Assure Safety of Food Sanitation through the Process of Environment, Manufacturing and Consumption	Jan 2002-Dec 2005	Social Development	
	Mid-term Plan to Establish Safety Management System in Food Industries	Jan 2001-Dec 2004	Social Development	
	Promotion of Healthy Diet Culture	Jan 2004-Dec 2004	Social Development	
	Plan to Strengthen National Prevention and Control of Communicable Diseases	Jan 2001-Dec 2004	Social Development	
	Reconstruction of Disease Control System	Jul 2003-Dec 2004	Social Development	
	Intensified Prevention and Control of Dengue Fever	Jan 2004-Dec 2006	Social Development	
	Five-year Plan for the Construction of the National Health Research Institutes Buildings	Jan 1999-Dec 2004	Public Construction	
	Plan for the Self-Manufacturing of Vaccines for Human Use	Jul 1997-Dec 2004	Social Development	
	Study to Assess Laboratory Testing Technologies for Abused Drugs and Epidemiology and Toxicity of Drug Abuse	Jan 2004-Dec 2004	Science and Technology	
	Promotion of the Integration, Research and Development of Information on Biotechnological Medicine and Pharmacy	Jan 2004-Dec 2004	Science and Technology	
	National Health Research Institutes Research Projects in Medicine, Pharmacy and Health	Jan 2004-Dec 2004	Science and Technology	
	Science and Technology Research on Laboratory Testing of Food	Jan 2004-Dec 2004	Science and Technology	
	Science and Technology Development in the Control of Communicable Diseases	Jan 2004-Dec 2004	Science and Technology	
	Science and Technology Development in National Health	Jan 2004-Dec 2004	Science and Technology	
	National Health Research Institutes Research Projects in Bio-science and Technology	Jan 2004-Dec 2004	Science and Technology	
	Integrated Science and Technology Research in Health and Medical Care	Jan 2004-Dec 2004	Science and Technology	
	Science and Technology Research in the Laboratory Testing of Drugs and Cosmetics	Jan 2004-Dec 2004	Science and Technology	
Self-monitored	Eradication and Elimination of Polio, Measles, Neonatal Tetanus and Congenital Rubella Syndrome	Jan 2002-Dec 2006	Social Development	
	Fifth-phase Plan for the Control of Hepatitis	Jan 2003-Dec 2007	Social Development	
	Third-phase Five-year Plan for the Control of AIDS	Jan 2002-Dec 2006	Social Development	
	Third-phase Five-year Plan for the Prevention and Control of Tuberculosis	Jan 2004-Dec 2008	Social Development	

Table 11-1 List of Projects Monitored and Managed, Department of Health, 2004 (Continued)

Level Project Title	Project	Duration	Category	Total
Self-monitored	Promotion of Breast-Feeding	Jan 2004-Dec 2004	Social Development	16
	Supervisory Centers in Worksites for the Control of Tobacco Hazards	Jan 2004-Dec 2004	Social Development	
	Establishment of Clinical Trial System for New Drugs: Promotion of GLP, GCP and Establishment of Standard Operational Procedures and Other Relevant Facilities for Clinical Trial Laboratories	Jan 2004-Dec 2004	Science and Technology	
	Integrated Project on the Modernization and Internationalizationof Chinese Medicine and Pharmacy	Jan 2001-Dec 2006	Science and Technology	
	Genomic Study of Lung Cancer in Taiwan and its Clinical Application: Focusing on Female Pulmonary Gland Cancer	Jan 2004-Dec 2004	Science and Technology	
	DOH Plan for the Science and Technology Development of Drugs	Jan 2004-Dec 2004	Science and Technology	
	Supervision and Counseling before Research and Development, and Marketing of Bio-Products	Jan 2004-Dec 2004	Science and Technology	
	DOH Science and Technology Development Plans on Health and Medical Care (2003-2006): Plans for the Science and Technology Development of Medical Care-- Medical Affairs	Jan 2003-Dec 2006	Science and Technology	
	Strengthening of the Research and Development of New Drugs and Management Mechanism before Marketing and Construction of Environment -- Linking the Research and Development Industries of Bio-products and Laws and Regulations	Jan 2004-Dec 2004	Science and Technology	
	National Health Research Institutes Nanometer Medical Science and Technology Projects	Jan 2004-Dec 2004	Science and Technology	
	DOH Science and Technology Development Projects on Foods	Jan 2004-Dec 2004	Science and Technology	
	Science and Technology Management of Medicine, Pharmacy and Health	Jan 2004-Dec 2004	Science and Technology	
Post-SARS Reconstruction Projects-Medical Care and Public Health	Reconstruction of Disease Control System	Jul 2003-Dec 2004	Special Budget	11
	Reconstruction of the Confidence and Consensus of Health and Medical Care Personnel	Jul 2003-Dec 2004	Special Budget	
	Strengthening of Isolation Ward Facilities in Hospitals	Jul 2003-Dec 2004	Special Budget	
	Construction of Safe Medical Care Environment	Jul 2003-Dec 2004	Special Budget	
	Establishment of Community-based Medical Care System	Jul 2003-Dec 2004	Special Budget	
	Directions of Public Hospitals	Jul 2003-Dec 2004	Special Budget	
	Mental Rehabilitation Projects	Jul 2003-Dec 2004	Special Budget	
	Promotion of Medical Care by Level	Jul 2003-Dec 2004	Special Budget	
	Expediting the Promotion of the National Health Insurance IC Card	Jul 2003-Dec 2004	Special Budget	
	Improvement of Drug Safety	Jul 2003-Dec 2004	Special Budget	
	Establishment of Systems for the Laboratory Testing and Assessment of SARS Control Drugs in National Drug Laboratories	Jul 2003-Dec 2004	Special Budget	
Reconstruction Projects after the September 21 Earthquake	Suicide Prevention Project in Nantou County Health Bureau			4
	Mental Health and Suicide Prevention Project in Yunlin County			
	DOH Post-Disaster Mental Health Reconstruction Plans			
	Subsidies on National Health Insurance Premiums for Residents of the September 21 Earthquake Reconstruction			

Table 11-2 Training Courses for Health Personnel, 2004

Course	Participants	No. of Personnel	Main Focuses
Health Leadership Camp	Heads of DOH units and affiliated organizations, directors of county/city health bureaus	280	Policy issues on community-based medical care and health promotion, mid-term plans of the DOH, safe use of drugs and risk management, and prevention and control of AIDS.
Senior Specialists Health Planning Consensus Camp	Senior specialist of DOH units and affiliated organizations	120	Improvement in capabilities of special project management and assessment, communication on the DOH mid-term plans.
Special Project Managers Workshop	Mid-level personnel of the DOH and health bureaus of counties and cities	70	Assessment of health plans and integration and development of health resources.
Team Exploration Workshop	Primary-level of DOH units	630	Development of team consciousness, reduction of gaps in communication, strengthening the promotion of policies, upgrading administrative efficiency.

Plan for the Overall Improvement of Service Quality of the Research, Development and Evaluation Commission, the Executive Yuan. The Plan carries some breakthrough concepts and approaches for the service of the people, and brings in ideas and methods of total quality management. The Department has, by following the Plan, formulated 54 specific approaches in five major categories to reach the goals of "simplification of administration, for the convenience of the public, and for the best interests of the people". The Department submitted to the Research, Development and Evaluation Commission a final report on accomplishments in improving service quality. The contents of the report included accomplishments of the DOH-affiliated agencies and the DOH hospitals, their review and actions taken. Some organizations were recommended for the 6th Awards for Best Service Quality of the Executive Yuan. The DOH Taichung Hospital won the award for overall service accomplishments; the Kao-Ping Branch Bureau of the Bureau of National Health Insurance won the award to individual institution for service accomplishments.

4. Training on Communication for Health Policies

Along with changes and diversification of medical science and technologies, healthcare systems have also faced a number of challenges and shocks. After the outbreaks of SARS, the Department has come to realize the importance of strengthening both vertical and horizontal communication between the central and the local health teams; and that skills and knowledge in administration and management should be intensified to face the new challenges of public health. In 2004, the focus of the training was to promote communication and realization of health policies to reach a consensus of the health teams, and to upgrade leadership and management. Details of the training programs are shown in Table 11-2.

2. Cross-Strait Exchange of Health Professionals

The visits to Taiwan for exchange of health professionals on mainland China are organized in accordance with provisions of the Regulations Governing Permission for Professionals on Mainland China for Visit to Taiwan for Professional Activities. The competent authority is the Ministry of the Interior; and the matter is handled by the Bureau of Entry and Exit of the National Police Administration, the Ministry of the Interior. When applications are accepted by the Bureau of Entry and Exit, they are referred to the central competent authorities concerned for the review of their professional qualifications and itineraries. The Department is the competent authority for health matters. After the review with comments, the applications are returned to the Bureau of Entry and Exit for final decision to issue

or deny permission.

Activities of the mainland Chinese health professionals in Taiwan are restricted to four categories of "visit and study tour", "participation in conference or presentation", "research" and "clinical teaching". Most of them visit Taiwan for either visit and study tour or participation in conferences, 49% and 46%, respectively.

In the last years, visiting health professionals of the mainland China account for 8% of all professionals of mainland China visiting Taiwan. There was a significant decline in the number in 2003 during the SARS outbreaks. The number of visitors restored to normal in 2004. In this year, a total of 277 applications for 2,050 person-times had been received, and 1,770 person-times had been approved for entry; and at the end, 1,249 person-times had made the trip. They have come primarily to learn about Taiwan's experience, particularly in the management of medical care institutions.

3. Management of Voluntary Services

1. Voluntary Groups and Service Items

The number of volunteer health workers under the Department at the end of 2004 was about 39,500, serving in 850 units. By the nature of the volunteer utilization units, they come in four groups, agencies affiliated to the central government such as the Bureau of National Health Insurance, Center for Disease Control; local health bureaus and health stations; public and private medical care institutions; and private sector organizations. The services they provide include acting as guides, service at information counter, counseling and related work. In hospitals, they also serve in outpatient clinics, emergency departments and wards. In health bureaus and health stations, they help in long-term care and home care, food sanitation, health education, mental health, and communicable disease control such as control of dengue fever, pulmonary tuberculosis and AIDS.

2. Promotion of Voluntary Services

1) Voluntary service workshop: In 2004, a workshop on health promotion voluntary service and coordination meeting was held in Taitung County for 80 participants from the Department, affiliated agencies, and county and city health bureaus.
2) Commendation of voluntary services: The Department, in accordance with provisions of the Regulations Governing Awards to Voluntary

Figure 11-1 Budget for Science and Technology Research in Health

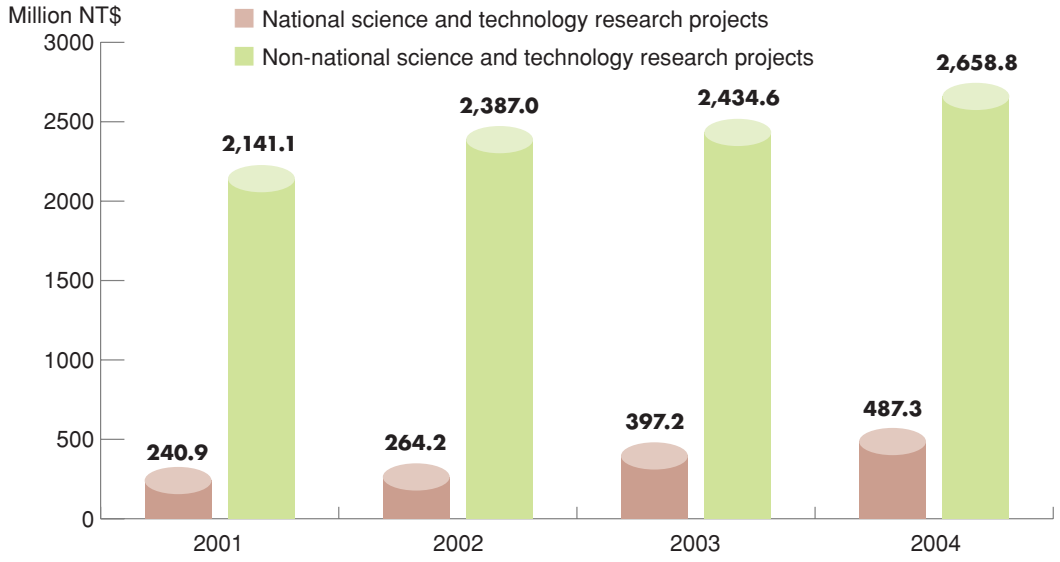
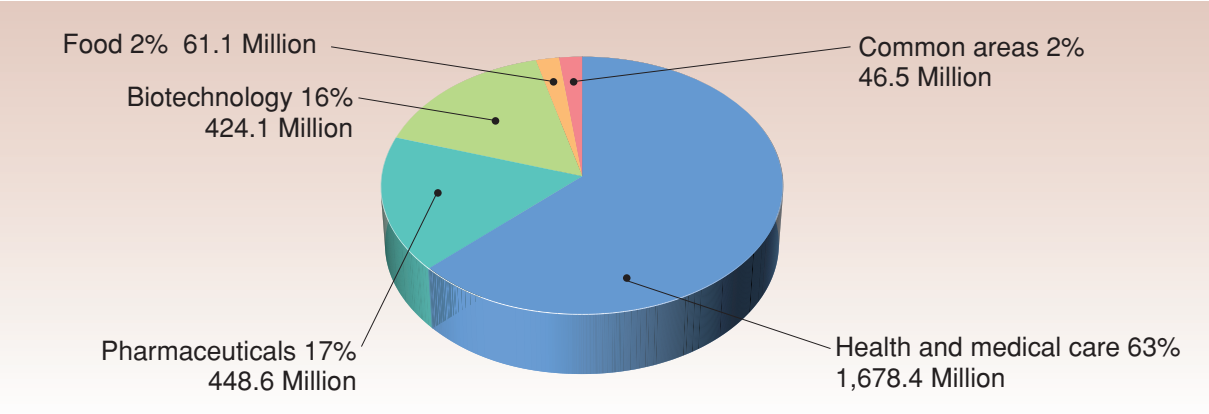


Figure 11-2 Allocation of Funds for Science and Technology Research in Health, 2004



Health Services, had conducted assessment and selection of outstanding volunteers and groups. The Third Award Celebration for Outstanding Volunteers and the Second Award Celebration for Outstanding Groups were held on August 17, 2004. A total of 349 outstanding volunteers and 48 outstanding groups were recommended by county and city health bureaus. After review, a total of 65 volunteers were awarded, one for golden medal, 19 for silver medals, 29 for bronze medals, and two for outstanding contributions. In addition, three voluntary service groups were also awarded.

3) Training: To improve the quality of voluntary service, the Department has entrusted county and city health bureaus to implement the 2004 training for health volunteers. Contents of the training curricula include basic training in voluntary service, spiritual growth of volunteers and knowledge of health and health promotion. 3,475 volunteers participated in the basic training; 8,270 were in the special training courses; and 1,903 joined other training programs, totaling 13,648 person-times.

4) Insurance for health volunteers: For their protection, volunteers serving in the Department, the affiliated agencies, health bureaus and health stations, and agencies and groups helping with health programs have been insured against accidents. In 2004, some 14,000 volunteers had been insured.

4. Science and Technology Development

In 2004, the Department (including affiliated agencies and the National Health Research Institutes) invested NT$ 3.15 billion for science and technology development, consisting of NT$ 487.3 million for national research projects, marking an increase of 22.6% over the NT$ 397.2 million of 2003. In 2004, investment in the non-national research projects was NT$ 2.66 billion, an increase by 9.2% over the NT$ 2.43 billion of 2003 (see Figure 11-1).

By fields (not including National Science and Technology Programs), the 2004 spending was NT$ 1.6784 billion for health and medical care, NT$ 448.6 million for pharmaceutical, NT$ 424.1 million for biotechnology, NT$ 61.1 million for food science, and NT$ 46.5 million for scientific management (see Figure 11-2).

The strategies for science and technology development comprise: planning for science and technology policies in health and medical researches, promotion of the establishment and integration of health and medical databases, establishment of core facilities for industry development and scientific research, building infrastructures and international cooperation mechanisms for the science and technology development in biopharm, development of science and technology manpower in health and medi-

cine, strengthening on the professional training and talent recruitment. To apply the research achievements, enhancing the strategic planning for science and technology schemes is conducted. There are 775 studies in pharmaceuticals, foods, biotechnologies and National Science and Technology Programs to. serve as the evidence basis for the Department in the formulation of policies. Research focuses and outcomes of the projects in 2004 are outlined respectively as follows.

Research Focuses

1. In the Field of Health and Medical Care

1) Research projects on population health promotion
   (1) Establishment and operation of National Health Interview surveys, and risk factors surveillance;
   (2) Strengthening the screening, prevention and control of cancers, and major chronic diseases;
   (3) Strengthening research in women's health, marriage and fertility, and health of children and adolescents;
   (4) Evaluation and progression of innovative techniques for community health and health education.
2) Science and technology research on medical care
   (1) Formulation and integration of regulations related to bio-medical science and technology, and establishment of management mechanisms;
   (2) Establishment of a safe medical care operational environment and ways to maintain patient's safety;
   (3) Occupational rehabilitation and employment placement for mental disorder individuals;
   (4) Strengthening of medical care for residents on mountainous, islet and outlying districts;
   (5) Special health issues such as drug abuse, alcohol addiction, mental health for women, domestic violence, sexual assault, and depression.
3) Drug abuse, addiction and cessation
   (1) Models of treatment for drug addiction;
   (2) Drug addiction and cessation.
4) Science and technology research on communicable diseases
   (1) Establishment of database on the pathogenic agents and genes of indigenous communicable diseases;
   (2) Development of molecular biological analytic methods for communicable diseases;
   (3) Establishment of communicable disease surveillance network and epidemiological investigations;
   (4) Studies related hepatitis, AIDS, tuberculosis, dengue fever and enterovirus infection;
   (5) Strengthening of surveillance and analysis for biological warfare, emerging infectious diseases and zoonosis;
   (6) Strengthening of imported communicable diseases from people of the mainland China and alien laborers;
   (7) Improvement of analytic level of medical care institutions for communicable diseases;
   (8) Research and development of serum vaccines and assessment of their effectiveness and benefits;
   (9) Researches of nosocomial infection and antibiotic resistance;
   (10) Researches of behavioral and educational intervention in disease control.

2. In the Field of Pharmaceuticals

1) Establishment of management systems for new biopharmaceutical products;
2) Development of pharmaceutical science and technology.
   (1) Study pharmaceutical industries, pharmaceuticals and the R&D related issues needed to guide regulations and policies;
   (2) Study standardizations of medical devices and quality management systems of cosmetics related issues needed to guide regulations and policies;
   (3) Study the impact of cross-strait relationship and Taiwan's admission to WTO on biopharmaceutical industries;
   (4) Study prospective policies, laws and regulations as well as management systems on pharmaceuticals.

3) Modernization and internationalization of traditional Chinese medicine
   (1) Initiate and promote studies related to the quality of health care systems and products of traditional Chinese medicine;
   (2) Improve the clinical trial infrastructure of and amend regulations governing traditional Chinese medicine.
4) Research programs for drug toxicity, epidemiology of drug abuse and analysis technology development;
5) Research programs for analysis technology development in pharmaceuticals and cosmetics;
6) Development of accreditation systems for establishing sound environment for biopharmaceutical industries;
7) Improvement of clinical trial infrastructure : develop and promote GCP, GLP and laboratory standards.

3.In the Field of Food

1) Studies on regulations concerning food sanitation, management polices and quality;
2) Studies related to biological or chemical hazards in food;
3) Effects of food processing, packing and storage techniques on food safety and nutrition ;
4) Studies on the food safety or nutritional functions of novel foods;
5) Establishment of a management and laboratory testing system comply with international agreements for genetically modified food products;
6) Studies on the knowledge and utilization of food and nutrition labeling by general public;
7) Studies on the correlation among nutrition, diet and diseases, and nutritional requirements of different age groups;
8) Researches and developments on healthy food (cross-ministerial);
9) Planning and promotion of a certification system for laboratories contracted for the testing of foods.

4. Science and Technology Research on Disaster Rescue Medical Care System

1) Studies on the health and medical care systems for different types of disasters;
2) Strengthening the emergency and disaster-coping capabilities of medical care institutions at all levels;
3) Building of databanks on rescue manpower and detachments;
4) Understanding of the disaster medical care situations, establishment of facilities for the long-term psychiatric care, and assessment of advanced disaster medical care measures;
5) Establishment of standard operational procedures for disaster medicine.

5. Research in Genomic Medicine

1) Genomic study of lung cancer in Taiwan and its clinical application;
2) Genomic related studies of Chinese medicine and pharmacy;
3) Establishment of a gene databank on Taiwan's pathogenic agents;
4) Improving diagnosis of genetic diseases and genetic counseling;
5) Establishing a strict assessment and review mechanism for the clinical trials of genomic medicine and their related products;
6) Studies under commission related to gene therapy and genetic epidemiology.

Achievements

1. In the Field of Health and Medical Care

The main objective of this field is to monitor the health of the Taiwan population. Establishment of major health indexes for each age group, development of norms (standards) for the physical development of children and the health needs for alien spouses including spouses from mainland China, setting standards for the assessment of institutions for assisted reproduction promotion of breast-feeding plan, recommendations on policy to reduce unnecessary Caesarean sections are continued to progress. A study on the relevant risk factors and intervention measures related to melancholia of the adolescents has been conducted. Information concerning the safety of various types of communities has been integrated. A surveillance system on accidents and

injuries has been established. The database enrollment through website login on the neonatal hearing screening has been established. Epidemiological investigations on oral cavity health and studies for the promotion and care of vision health have been completed. Models for the health promotion intervention and the prevention and control of some major chronic diseases of adults and the elderly have been established. Surveys of the health behaviors of employees of small and medium scale enterprises and assessment of their health risks are ongoing. Plans to assess the effects of screening and treatment on some common cancers have been completed and being applied as references for planning, formulating and assessing the cancer prevention and control policies.

A study has been conducted to develop a patient-centered monitoring system for various medical care institutions and standard operational models of clinical care for patients. Forty eight indexes for the safety of patients that are applicable to Taiwan have been selected and placed on computers to promote communication and interaction between medical care teams in the process of the treatment of patients to monitor information of the patients at any time, and to serve as a set of guidelines for the safety of patients. Studies have also been conducted to evaluate the cost-benefits of tele-medical care and teaching. Correlations between the personality traits of melancholic patients with their family backgrounds, social support and compliance with physicians' orders have been studied; and the suicidal risk factors of melancholia have also been reviewed to assess the chances of suicide and ways of prevention. A manual on the specifications and practical operation of the assessment and treatment of inflictors of sexual assaults has been compiled. The manual in sixteen chapters presents assessment and treatment models based on the principles of the inflictors of sexual assault repetitions. Database of inflictors of sexual assaults, has been collected for the use of follow-up studies.

Studies related to the prevention and control of communicable diseases have been conducted. The infrastructures built through science and technology research can be linked and applied with the existing databases or systems to effectively break through bottlenecks of disease control, upgrade capabilities in the prevention and control of communicable diseases, and thus open up a new era of disease control. Studies related to some major indigenous communicable diseases have been conducted to effectively control some communicable diseases such as hepatitis, tuberculosis, AIDS, dengue fever and enterovirus infections.

2. In the Field of Pharmaceuticals

Review guidelines for the safety and effectiveness of portable blood glucose and occult blood in vitro diagnostic reagent products of class II as well as Serological Reagents for the Laboratory Diagnosis of Severe Acute Respiratory Syndrome (SARS) have been developed. Database of 2,434 cases of first-time hip-replacement and information on their post-operation follow-up have been established and analyzed as the reference for guiding regulations on national health insurance reimbursement. A standard sterilizing operation reprocess has been drafted for the purpose of building a standard SOP system for nosocomial reusable sterile devices.

Studies related to the evidence-based Chinese medicine and quality control of traditional Chinese medicine have been conducted to decide on the criteria of laboratory testing. Ten teaching hospitals have been subsidized to set up clinical trial centers for traditional Chinese medicines; the reporting system for the adverse reactions of traditional Chinese medicine has been improved; and the Chinese Pharmacopoeia and "Environment of Clinical Trial for Traditional Chinese Medicine and Regulations in Taiwan" have been compiled. Testing methods for drugs abused and their derivatives have been established. The items for testing accreditation have been assessed. Analysis of the trends of drug abuse among adolescents and students in colleges and universities has been conducted. Information on prevalence, risk factors and relevant epidemiology has been followed and established. Web-based learning models for the prevention of new emerging drug abuse have also been set up.

142 standards applicable to 47 items of medical device have been adopted. 8 review guidelines of medical device have been developed. Analytical methods for 6 impurities in two categories of medicines and 14 chemical and 2 physical components of sunscreen have been developed and validated. Also Sun Proof Factors(SPF) that are applicable to Taiwan have been drafted. A special volume-- "Identification of Easy Confused and Misused Raw Materials of Chinese Medicine (I)", has been published. A national standard of and a working standard of HBV nucleic acid, and a national standard serum kit for HCV antibodies as well as a national standard of HCV nucleic acid have been developed. Standardized NAT testing systems for the nucleic acids of HBV, HCV and B19 viruses in plasma materials and blood products have been developed. Pharmaceutical GMP auditing and inspection systems for quality assurance have been established. Investigation and testing of the quality of pharmaceuticals both on market and in inventory have been systematically promoted.

3. In the Field of Foods

Study on the gene expression profile in adipose tissue of mouse fed a fish oil diet To develop interactive learning systems through computers and multi-media for nutrition education on obesity and high blood lipids. Investigation on the antioxidative and anti-aging food in the Caenorhabditis elegans and Aβ/apoE4 treated neuronal cells. It was found that most biologically active fraction was in the ethyl acetate layer of the methanol extract of Angelica sinensis. Method to assess osteoporosis has been established. Assessment of the anti-cancer and health promotion effects of Toona sinensis has been conducted to develop relevant products. The quercetin and gallate in Roem are found to be able to inhibit the growth of human lung cancer cells in external testing.

Fourteen reference specimens for the testing of genetically modified food such as beans, corns, papayas and potatoes have been established. Four methods for screening genetically modified food have been developed. The Department has also participated the GIPSA (The Grain Inspection, Packers and Stockyards Administration)accuracy verificationtests tests 3 times on genetically modified beans and corns with outstanding results. Joint inter-laboratory testing of genetically modified food has been developed for the first time. Nine papers on testing methods for genetically modified foods have been published and also posted on the website, http://gmo.doh.gov.tw. Public health education on genetically modified foods has been reinforced. Contents of the website on genetically modified food products have been revised and updated; and leaflets have been produced. Market surveys for 393 cases of genetically modified foods have been conducted.

Analytical methods for pesticides and drug residues in agricultural and husbandry products have been established and announced. Investigations on the amount of the long-lasting organic pollutants such as PCB and organic chloride in fishery, husbandry,dairy products and eggs have been conducted. Residues and dissolution of Bisphenol-A in plastic feeding bottles and their sanitation safety have been investigated. The quantity of heavy metals in fishes, shellfishes and rice has been investigated. Kinds and quantities of organic mercury in deep-sea, offshore and farmed fishes have been investigated. Monitoring and testing methods for hazard derivatives in the food processing have been developed. Methods have been developed for the first time for the testing of vegetarian foods adulterated with animal ingredients. Seven such testing methods have been announced and one patent application has been processed. Analysis methods and quality investigation of the components of carbohydrate in fruit juice have been developed; analysis methods of high-sensitivity and specificity for Sulforaphane have been established; and analysis methods for flavonoids have been established. Establishment of information management systems for laboratories certified for food testing has been completed; and a system to match the capabilities between laboratories has been established. Practical training has been organized to develop inspection manpower. On-spot inspection has been made for five laboratories.

4. Studies on Disaster Prevention

The current situations of emergency care and rescue on campus have been studied; and recommendations for the formulation of a school emergency care and rescue plan are made. The recommendations include plans for a sound communications system, process of reporting, elimination of risk factors, first-aid training, first-aid facilities, and use of automated external defibrillator (AED) and advanced cardiac life support (ACLS). By using the outpatient operational system of hospitals, a set of dynamic simulation model coordinating with real-time information has been developed as an effective tool for hospital managers to serve as a reference in formulating disaster rescue plans, and to plan for the emergency dispersion and evacuation of patients at outpatient clinics.

5. Studies on Genomic Medicine

Through analyses of gene typing and associations, it has been found that at least two genes are associated with pulmonary gland cancer; it has also been found that at least four new specific gene deficiencies in Chinese are associated with the occurrence and prognosis survival of lung cancer. For the metastasis mechanism of lung cancer, analyses of CRMP-1, HLJ1, Slug and Neuropilin genes have been completed. By using the gene databanks of pathogenic agents already established by the Center for Disease Control, gene analyses of eight pathogenic agents including enterovirus have been conducted to establish models for the monitoring of epidemiological trends. By integrating the existing databanks of the Bureau of National Health Insurance and private sector organizations (such as the Rare Disease Foundation), and through comparing with data of the Bureau of National Health Insurance, databanks of epidemiological information on genetic (including rare) diseases and related service platforms have been established. For gene therapy studies, the peripheral blood mononuclearcells are cultured externally, stimulated to differentiate into dendritic cells with Th-1 immune functions for the treatment of patients suffering from glioblastoma. Some preliminary results have been obtained.

5. Research and Development of the National Health Research Institutes

Since the establishment of the National Health Research Institutes, the missions have been to solve major disease problems of the population, to develop science and technology in medicine and pharmacy, to cultivate research manpower in medical sciences, to upgrade domestic high-technology biology and medical care technologies and medical and pharmaceutical industries, and to assist the government in formulating health and medical care policies applicable to local situations. Some major research programs in 2004 are described as follows.

1. Mission-oriented health and medical care studies have been promoted to solve some major disease problems of the population.
2. Studies of medical care science and technology and pharmaceuticals have been conducted; study findings are used to develop new products and techniques.
3. Research projects of health and medical research institutions have been coordinated and integrated to improve the research development system.
4. Research has been conducted for the planning of health and medical care policies and preventive health systems.
5. Research manpower in health and medical care has been cultivated and encouraged to enrich research capabilities.
6. Resources in health and medical care are provided to establish a resource-sharing research environment.
7. Domestic and international cooperation and exchange in health and medical research have been enhanced.

In 2004, a total of 226 papers had been published in journals; and the average SCI impact factor was 4.12. various professional. In addition, three overseas patents and two domestic patents had been approved. Some major achievements in 2004 are shown as follows.

1. Research on the treatment of cancer: An assess-

ment and investigation of the mechanism of the anti-cancer activities of a derivative of the new anti-cancer drug AHMA and BPR01075 have been completed. Concepts on the prevention, control and treatment of cancer have been promoted. "Consensus for Diagnosis and Treatment of Radiotherapy" and "Consensus for Diagnosis and Treatment of Brain Tumor" have been published. The "Taiwan Surveillance of Antimicrobial Resistance III" has been completed to provide medical care organizations with strategies and measures to contain the dispersion and recurrence of drug resistant bacilli. Research findings concerning antimicrobial resistant organisms in food animals have been referred to the Council of Agriculture for reference in policy-making. The prospective study of the etidogy of community acquired pneumonia in hospitals in Taiwan, the first one in Taiwan, has been conducted in collaboration with hospitals to provide indigenous indexes on empirical treatment. In the areas of environmental health and occupational medicine, it has been found that exposure to arsenic in the blackfoot disease prevalent areas has significant impact on cardiovascular disorders and diabetes. Furthermore the multi-organ toxicity of arsenic is confirmed. The follow-up studies and indexes on the impact of ethylene glycol monoethy ether acetate exposure dosage in workplaces on workers' health have been completed and the results can be used to establish effective health screening procedures.

2. Studies on the association of the epidermal growth factor receptor and lung cancer have disclosed that as high as 39% of carcinomas show epidermal growth factor receptor gene mutation; of which, the mutation rate is as high as 55% in lung adenocarcinoma. The association of this gene mutation with Gefitinib therapy has been proved. The study findings predict that Gefitinib therapy would be effective to some 50% of the lung adenocarcinoma patients in Taiwan. They also suggest that the oriental and the western people respond differently to Gefitinib therapies. Using "gene microarray analysis platform technology" several likely cancer markers were discovered. They can be used to assess newly developed diagnosis and prognosis of cancer. The platform is also used to assist in the design and production of diagnostic microarray chips for SARS, and also for the construction of total genome chips for viruses of insects. An animal model of cancer and enterovirus diseases has been completed; and a new chemical compound that can inhibit the cloning of enteroviruses is found. A new type anti-cancer chemical compound has also been found. The chemical compound can inhibit the division of cancer cells. In animal experiments of cervical cancer, stomach cancer and leukemia, it has demonstrated significant inhibition on the growth of tumor. In studies on the new use of old drugs against the cloning of SARS viruses, a platform technique on the screening of new drugs has been established, and a chemical compound effective in fighting against SARS coronavirus has been found. Studies in medical engineering have focused on artificial cardiac valves, analysis of ultrasound tissue images, blood kinetics, non-invasive body surface Laplacian ECG mapping system, reconstruction of three-dimensional PET images, and molecular images of cardiovascular diseases. The non-invasive body surface Laplacian ECG mapping system can produce immediate time series images of cardio-muscular movement, and allows physicians to precisely detect the position of arrhythmia in the heart.
3. Large-scale research teams have been formed on contract basis to expedite research progress. At the present time, 14 projects are ongoing. In 2003, the "Integrated Research Grants in Health and Medical Sciences" had produced 119 papers on local and international journals; of them, 109 were published in the SCI journals. In 2004, 113 Integrated Research Grants In Health and Medical Sciences had been furded to promote excellent research in health and medicine in local medical research institutions.
4. A collaborative network for research on health and medical care policies has been formed. In the first stage, a national health survey was conducted to

establish an unprecedented model of national health survey conducted jointly by the academic, research and administration units. In coordination with the domestic and international activities on tobacco hazards control, recommendations on the prevention and control of tobacco hazards have been made; a collection of papers on tobacco hazards control has been published; and guidelines on tobacco cessation clinics and training manuals have been produced. Suggestions and comments of national medical manpower have been solicited and compiled; and studies on the projection and planning models of physician manpower have been conducted. In 2004, recommendations were made on the required manpower in the next 12 years for four specialties, obstetrics and gynecology, pediatrics, ophthalmology and anesthesiology. A community joint care network for diabetes and a network for their long-term monitoring and research have been set up. Surveys to measure the long-term health behaviors of children and adolescents, and preventive health surveys of children have been conducted. Special projects such as "national conference on health and medical care policies", and "national commanding systems on incidents of major health risks and strategies" have been promoted. Publications such as "report on the third-stage literature review and analysis", "strategies on the development of long-term care in communities", "proceedings of the symposium on the development of care services for mentally impaired patients", and "development of medical ethics in Taiwan: inquiries into some processes and cases", have been produced. A set of recommendations on the development of registered professional nurses and regulations on their practice have been prepared.

5. Outstanding research personnel has been recruited in health and medical sciences. In 2004, four physicians in tumor specialty were under training. Awards have also been made for medical students in dual-degree program, for medical and dental students to pursue doctorial degree, and for researchers in the post-doctorial program. The National Health Insurance Research Database, cell-banks, and the Health-Research Information Network have been made available to all researchers in health and medicine throughout the country. Various workshops have been organized to train professionals bioinformatics and related topics. Response has been overwhelming. The National Health Insurance Research Database made available for industrial application which has been in great demand. Through various academic activities, including education and training, technical workshops, academic symposiums and lectures, NHRI has played a key role for new knowledge to be brought in, and new techniques to be introduced. In 2004, some 4,000 persons had participated in these activities.

XII. International Cooperation in Health

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When Taiwan has already joined the rank of developed countries, the promotion of international cooperation in health is not only the trend of the times; it is also an important key as to whether Taiwan can stand out conspicuously on the global stage. The Department thus, in accordance with the Organization Act of the Department of Health, the Executive Yuan, set up the Bureau of International Cooperation in August 2004 to be responsible for the planning, promotion, coordination, and collection of relevant information related to international cooperation and exchange in health and foreign aid. The promotion of matters concerning international organizations and international images, recruitment of experts, and development of professional manpower in international health affairs are also some of the important responsibilities of the Bureau.

In the future, more innovative and pluralistic approaches will be taken to develop more diversified modes of international health cooperation. In the process of the execution of various international health cooperation programs, more substantive and direct contacts can be made with developed countries and international organizations to promote mutual understanding, and to develop modes of contact that are more applicable to Taiwan. By means of international health cooperation, Taiwan can be active in the global village to help countries and peoples in need of help, and thus to attain the ultimate goals of feeding back to the world and contributing to world health.

1. International Exchange in Health

The purposes of international exchange are to strengthen health and medical cooperation with friendly countries, to assist friendly countries to improve their health and medical care standards, to fulfill the responsibility of Taiwan as a member of the global community, and to strive for gaining international understanding of and high regard for Taiwan. In strategies, international organizations of high regional influence such as the APEC in Asia, PAHO (Pan American Health Organization) in the Americas, WAHO (Western Africa Health Organization) in Africa, and EHFG (European Health Forum Gastein) and OECD in Europe are used as interactive platforms for the promotion of bilateral and multilateral conversations and international cooperation. The efforts of Taiwan in humanitarian medical aid and the substantive exchanges of Taiwan with other countries are made known to international media to gain more visibility of Taiwan in international cooperation.

Activities in international health exchanges made in 2004 are summarized as follows.

1. Delegates were sent to participate in the 7th EHFG meeting in Europe. A parallel forum on health insurance was held to share with participants from other countries Taiwan's experience in health insurance.
2. In 2003, a Health Task Force (HTF) was promoted by Taiwan together with the US and Thailand. Taiwan succeeded in gaining sponsorship for the first HTF meeting in Taipei in April 2004. Taiwan had also assisted in the establishment of an APEC HTF electronic work platform and a tele-conference system to serve as a bridge for communication between HTF members and the APEC Secretariat.
3. Health professionals are stationed in Europe (in the Geneva Representative Office), the US (in the Taipei Cultural and Economic Representative Office in the US), and Africa (in the Embassy in Malawi), to be fully in charge of matters concerning international health cooperation.
4. The 4th International Workshop on Health was organized to invite professionals of friendly countries to exchange experiences on communicable

disease control and issues of health and medical care.

5. The 2004 Meeting of Health Ministers of Austronesia Countries was held. Health ministers of the Solomon Islands, Marshall Islands, Palau and Tuvalu sign with Taiwan bilateral agreements on health cooperation and also the Taipei Communique on Health of the Austronesia Countries.
6. International symposiums on health and medical care have been held to invite experts and scholars in the relevant fields of specialties for lectures and speeches to promote international academic exchanges.
7. Delegates are sent to participate in meetings of international non-governmental organizations and regional council meetings of the World Health Organization's regional offices. Staff members have also been sent to academic institutions for advanced training to promote international exchange and cooperation in health matters.
8. Domestic non-governmental organizations are encouraged to participate in activities of international non-governmental organizations.
9. Health professionals and journalists from other countries are invited to visit Taiwan to understand in person the standards of health and medical care, and the development of public health in Taiwan.

2. International Cooperation and Aid

Since the withdrawal of Taiwan from the World Health Organization in 1972, Taiwan's close link with the international health community has been interrupted. Facing the trend of globalization, to maintain the health of the people on Taiwan, to meet the challenges of the new era that health has no upper limit and diseases see no boundary, Taiwan has made all efforts to promote international cooperation and aid in health matters to knock at the door of the world, to fulfill the responsibility of being a member of the global community, and to facilitate international communities to understand Taiwan, with a hope to develop step by step and steadily Taiwan's health diplomacy. Major achievements of 2004 are illustrated as follows.

1. A National Reference Laboratory was established in Haiti under the joint efforts of the US, Haiti and Taiwan.
2. Efforts have been continued to promote the malaria eradication program in Sao Tome and Principe. Their health teams have been assisted to promote healthcare programs. Medical devices such as walking sticks and devices for the promotion of oral health have been donated.
3. Medical teams have been sent to Tuvalu, Kiribati and Fiji for the promotion of oral health programs.
4. For relief to the South Asian countries that had been heavily devastated by the tsunami disaster, ministries concerned joined together to donate medicines and medical devices, dispatch disease control teams to contain epidemics, and help establish medical care centers in these countries.
5. Assistance has been given to Malawi to train midwives and to implement AIDS control programs. Delivery kits, laboratory facilities and other medical devices have been donated.
6. Cooperation programs in health and medical care have been implemented with Vietnam. These programs include prevention and control of the vertical transmission of AIDS from mothers to children, tuberculosis control, training in the management of population and family planning programs, and training of nursing personnel.
7. Assistance has been given to four public health and medical schools in Central and South America and Africa to install communications facilities with a hope to develop bilateral relations with countries of no diplomatic relationship.
8. Health promotion programs for Tibetans in exile in South Asia have been implemented to help them upgrade medical care quality and technologies.
9. Training has been offered to four physicians in ophthalmology, gastro-intestinal medicine and psychiatry from Mongolia.
10. Medicines and supplies have been donated to the Dominican Republic and others for the humanitarian relief to refugees.

In the times of globalization, a closed system of

health and medical care can no longer solve the health problems of the new era. To draw medical care technologies and health policies from advanced countries, Taiwan has, each year, sent professionals to participate in international conferences and study tours to learn about new knowledge in health management and science and technology. At the same time, the many non-governmental organizations of Taiwan have actively participated in international cooperation in health matters. By the joint efforts of the government and the private sectors, through international interactions and by learning from others, we hope to improve the health status of the population. It is, however, a regret that Taiwan is still barred from the World Health Organization.

3. Striving for Membership in the WHO

The Republic of China was one of the founding members of the World Health Organization. In 1945, the ROC and Brazil representatives to the San Francisco Conference of the United Nations proposed the establishment of, as soon as possible, a world health conference to form a world health organization. The World Health Organization, recognizing that "good health" is a fundamental human right, states clearly in its Charter, "The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, political belief, economic or social condition." In 1972, the ROC was forced to leave the WHO. However, in the past decades, the ROC government and the people have never forgot to abide by the spirit of the WHO to improve the health status of its population, and to promote international cooperation in health matters to fulfill its responsibility as a member of the global community. To strive for the WHO membership, the Executive Yuan established on April 25, 2001, a "WHO Task Force on the Promotion of Membership with the WHO", in an effort to effectively consolidate and utilize all available resources, focusing on medical care, health and humanitarianism as main appeals, to win international recognition, and thus as an ultimate goal, to participate in the WHO. Since 1998, every year in May when the World Health Assembly convenes, Taiwan has sent delegations to Geneva, site of the Assembly meeting, to seek support from all circles to Taiwan's bid of becoming an observer of the WHA to participate in affairs of the WHO. In 2004, the proposal of "inviting Taiwan to the World Health Assembly as an observer" submitted by Taiwan's friendly countries was discussed enthusiastically on the first day of the Assembly meeting at the General Council meeting. The strong opposition of the People's Republic of China, however, killed the proposal; and the proposal was, unfortunately, overruled and not placed on the agenda of the plenary session of the Assembly.

In 2004, activities in this respect had focused on building interactions with the WHO, planning propagation on media, and actively participating in the WHO-related activities. They are:

1. Letters had been sent to the 191 member states of the WHO to solicit their support.
2. Local professional societies had been encouraged to establish substantive collaborative relations with international non-governmental organizations in health and medical care. Conferences and activities relevant to the directions of their counterpart international non-governmental organizations were held. These professional societies were further requested to write to their counterpart international organizations to send letters to the Secretary General of the WHO, international friends in the same profession, national congresses, and ministers of health and foreign affairs, expressing their strong support to Taiwan's bid of becoming an observer of the WHA.
3. Leaflets and booklets such as Taiwan Public Health Update, Labor of Love, SARS and Flu Prevention Taiwan Experience, 2004 Tobacco Control in Taiwan, and Different Health Administrations: Taiwan and China, had been published.
4. Leaflets had been printed to refute the lies of the mainland China that the health of the people on Taiwan is well taken care of by them.
5. Leaders or members of the Taiwan medical teams

in Malawi and Sao Tome and Principe were made to attend the WHA meeting as consultants of the governments.

6. Prior to the WHA meeting, in coordination with the planning of the Ministry of Foreign Affairs, delegations visited Europe, Czechoslovakia, Germany, Switzerland and other countries to meet with high officials of the ministries of health and foreign affairs to seek for their support, and at the same time, to explore possibilities of bilateral cooperation.
7. Working groups had been formed to actively study the amendment of the International Health Regulations (IHR) of the WHO. Recommendations were made and officially submitted to the WHO. Delegations had also been sent to the IHR amendment meetings to understand the progress of the amendment.
8. The US and Japan clearly stated their support to Taiwan's bid and would vote for it when the issue came to voting. The EU and Canada expressed deep concern over this matter. The US's solid statement obviously gave the EU certain room for consideration; and the EU though voted against the issue for diplomatic reasons, proposed openly for the first time in the plenary session that there ought to be a mechanism to admit Taiwan to the WHO system. Canada also maintained the same position.

Until Taiwan becomes an observer of the World Health Assembly, Taiwan will continue to play a responsible role in the area of global health, to assure that the epidemic information of Taiwan is always made transparent, to abide by the various health agreements and conventions of the WHO, and to share its responsibility with the rest of the world community in solving public health-related problems and in promoting the health and welfare of all peoples of the world.

Appendixes

Table 1 Population Statistics

Year	Population	Poulation Composition			Dependency Ratio	Sex Ratio (per 100 women)	CBR	CDR	NIR	Life Expectancy		Population Density (Persons/ km²)
		Under 15	15-64	Above 65						Male	Female	
	(1,000)	%	%	%	%		0/00	0/00	0/00	Year	Year	
1992	20752	25.76	67.44	6.80	48.29	107	15.54	5.33	10.21	71.79	77.22	576
1993	20995	25.15	67.75	7.10	47.60	106	15.58	5.31	10.27	71.61	77.52	580
1994	21178	24.41	68.21	7.38	46.60	106	15.31	5.40	9.91	71.81	77.76	585
1995	21357	23.77	68.60	7.64	45.78	106	15.50	5.60	9.90	71.85	77.74	590
1996	21525	23.15	68.99	7.86	44.94	106	15.18	5.71	9.47	71.89	77.77	595
1997	21743	22.60	69.34	8.06	44.22	106	15.07	5.59	9.48	71.93	77.81	601
1998	21929	21.96	69.79	8.26	43.30	105	12.43	5.64	6.79	72.20	77.96	606
1999	22092	21.43	70.13	8.44	42.60	105	12.89	5.73	7.16	72.46	78.12	610
2000	22277	21.11	70.26	8.62	42.32	105	13.76	5.68	8.08	72.67	78.44	616
2001	22406	20.81	70.39	8.81	42.07	104	11.65	5.71	5.94	72.87	78.75	619
2002	22521	20.42	70.56	9.02	41.72	104	11.02	5.73	5.29	73.22	78.94	622
2003	22605	19.83	70.94	9.24	40.97	104	10.06	5.80	4.27	73.40	79.31	625
2004	22689	19.34	71.19	9.48	40.48	104	9.56	5.97	3.59	73.47	79.70	627
% difference over previous year	0.37	-0.49	0.25	0.24	-0.49	-0.00	-0.50	0.17	-0.18	0.07	0.39	0.32

Note : Data for Kinmen County and Lienchiang County are included since 1993.
Soure : Department of Statistics, Ministry of the Interior.

Table 2 Health and Medical Expenditures

Year	Annual Economic Growth Rate	Per Capita GDP	Final Expen-diture of Health Care for Private Sectors	% of GDP	% of Private Consumption	Net Expenditures of All Government Fiscal Year	Health and Medical Expenditures	Expenditure of DOH and Affiliated Organizations of Total Center Government Expenditures	Medical Expenditures as % of GDP	Consumer Price Index	Medical Expenditure Index
	%	US$	NT$ million	%	%	NT$ million	%	%	%	2001=100	
1993	7.0	10757	236726	4.00	7.07	1756306	*1.56	0.81	4.96	86.39	84.54
1994	7.1	11613	264295	4.09	7.00	1826367	1.58	0.71	5.05	89.93	86.11
1995	6.4	12488	315464	4.50	7.65	1910066	1.53	0.70	5.49	93.23	87.48
1996	6.1	13527	355249	4.47	7.64	1843786	1.57	0.63	5.39	96.10	88.96
1997	6.6	13904	393237	4.57	7.79	1878764	1.51	0.61	5.40	96.96	91.06
1998	4.6	12679	431469	4.67	7.94	1992593	1.37	0.52	5.48	98.60	91.91
1999	5.8	13609	469765	4.87	8.16	2050004	1.31	0.51	5.67	98.77	95.11
2000	5.8	14519	493863	4.92	8.11	3140936	1.28	0.85	5.67	100.01	98.68
2001	-2.2	13093	516748	5.24	8.43	2271755	1.17	1.07	5.97	100.00	100.00
2002	4.3	13163	541498	5.31	8.66	2144917	1.29	1.10	6.00	99.80	101.29
2003	3.4	13327	561720	5.44	8.93	2206223	1.53	1.14	6.20	99.52	104.65
2004	6.1	14217	586389	5.44	8.86	2238914	1.46	1.17	6.17	101.13	106.72
% difference over previous year	2.64	7.08	4.39	0.00	-0.07	1.48	-0.07	0.03	-0.03	1.61	2.07

Note : 1. Economic growth rate is measured by real GDP.
2. Public medical care operational funds are not included since 1993.
Source : Directorate-General of Budgeting, Accounting and Statistics, June 2001; Annual Financial Report, Ministry of Finance

Table 3 Medical Manpower and Facilities

Year	Medical Care Institutions	Hospitals	Western Medicine			Chinese Medicine			Clinics	Western Medicine	Chinese Medicine	Dentistry
				Public	Private		Public	Private				
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1993	15062	810	709	93	616	101	1	100	14252	8204	1803	4245
1994	15752	828	719	97	622	109	1	108	14924	8511	1876	4537
1995	16109	787	688	94	594	99	1	98	15322	8683	1933	4706
1996	16645	773	684	94	590	89	1	88	15872	9009	1987	4876
1997	17398	750	667	95	572	83	2	81	16648	9347	2165	5136
1998	17731	719	647	95	552	72	2	70	17012	9473	2259	5280
1999	17770	700	634	96	538	66	2	64	17070	9378	2317	5375
2000	18082	669	617	94	523	52	2	50	17413	9402	2461	5550
2001	18265	637	593	92	501	44	2	42	17628	9425	2544	5659
2002	18228	610	574	91	483	36	2	34	17618	9287	2601	5730
2003	18777	594	558	91	467	36	2	34	18183	9565	2729	5889
2004	19240	590	556	88	468	34	2	32	18650	9819	2852	5979
% difference over previous year	2.47	-0.67	-0.36	-3.30	0.21	-5.56	0.00	-5.88	2.57	2.66	4.51	1.53

Source : Office of Statistics, Department of Health

Table 3 Medical Manpower and Facilities (Continued)

Year	Hospitals by Accreditation									
	Medical Centers		Regional Hospitals		District Hospitals		District Teaching Hospitals		Psychiatric Hospitals	
	No.	Beds	No.	Beds	No.	Beds	No.	Beds	No.	Beds
1993	14	17822	46	19857	495	39263	54	12213	29	7987
1994	13	16590	45	21662	509	41775	57	13165	29	7793
1995	14	19375	44	22342	505	44750	63	15860	30	8368
1996	14	19919	45	24099	479	44369	68	18463	28	8126
1997	16	22151	51	28282	468	42834	69	17514	26	8348
1998	17	23405	51	28974	469	44621	67	18143	27	8395
1999	18	24555	51	27883	426	42327	66	18446	32	8709
2000	23	27473	63	33820	387	36080	49	13277	32	9399
2001	24	28389	66	35381	401	36104	47	13168	35	9703
2002	23	29398	71	40761	385	35860	41	11468	36	9450
2003	23	30301	72	42158	372	34922	42	11765	37	10493
2004	24	31195	72	43628	359	35952	42	12594	37	10879
% difference over previous year	4.35	2.95	0.00	3.49	3.49	2.95	0.00	7.05	0.00	3.68

Note : 1. Medical Centers include provisional medical centers.
2. Regional hospitals include provisional regional hospitals.
3. Psychiatric hospitals include psychiatric teaching hospitals.

Souce : Office of Statistics, Department of Health.

Table 3 Medical Manpower and Facilities (Continued)

Year	Health Stations	Taiwan Province	Taipei City	Kao-hsiung City	Kinmen Matsu	No. of Beds	No. of Beds in Hospitals			No. of Observation Beds in Clinics	Per 10,000			
								Public	Private		Hospital Beds	General Beds	Acute Beds	Special Beds
	No.	No.	No.	No.	No.	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds	Beds
1993	369	338	12	11	8	100570	92011	37366	54645	8559	44	37	28	7
1994	369	338	12	11	8	103733	94270	37586	56684	9463	45	37	29	7
1995	369	338	12	11	8	112379	101430	39922	61508	10949	48	39	30	8
1996	369	338	12	11	8	114923	104111	40125	63986	10812	48	39	31	9
1997	369	338	12	11	8	121483	108536	41421	67115	12947	50	40	32	10
1998	369	338	12	11	8	124564	111941	42838	69103	12623	50	41	33	10
1999	369	338	12	11	8	122937	110660	39440	71220	12277	50	40	33	10
2000	367	338	12	11	8	126476	114179	40129	74050	12297	51	40	33	11
2001	363	332	12	11	8	127676	114640	39670	74970	13036	51	39	33	12
2002	363	332	12	11	8	133398	119847	41904	77943	13551	53	40	33	13
2003	372	340	12	12	8	136331	121698	42777	78921	14633	54	40	33	14
2004	372	339	12	12	9	143343	127667	43865	83802	15676	56	42	34	15
% difference over previous year	0.00	-0.29	0.00	0.00	12.50	5.14	4.90	2.54	6.18	7.13	3.70	5.00	3.03	7.14

Note : No. of practicing medical personnel include dietitians since 1995; and occupational therapists and occupational therapy technicians since 1998.

Source : office of Statistics, Department of Health.

Table 3 Medical Manpower and Facilities (Continued)

Year	No. of Medical Care Personnel	Physicians	Chinese Medicine Doctors	Population Served per Physician (including Chinese Medicine Doctors)	Dentists	Population Served Per Dentist	Pharmaceutical Personnel	Population Served Per Pharmaceutical Personnel	Nursing Personnel	Population Served Per Nursing Personnel	Medical Technologists (including Assistants)	Medical Radiological Technologists (including Technicians)
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1993	109538	23491	2701	802	6540	3210	19374	1084	51308	409	4329	1671
1994	114076	24455	2833	776	6973	3037	18762	1129	54639	388	4593	1699
1995	118242	24465	3030	777	7026	3040	19224	1111	57585	371	4722	1793
1996	123829	24790	2992	775	7254	2967	19667	1094	62268	346	5034	1453
1997	137829	25730	3299	749	7573	2871	21246	1023	70447	309	5389	2266
1998	144070	27168	3461	716	7900	2776	22761	963	71919	305	5583	2485
1999	152385	28216	3546	696	8240	2681	23937	923	76252	290	6015	2500
2000	159212	29585	3733	669	8597	2591	24404	913	79734	279	6230	2761
2001	165855	30562	3979	649	8944	2505	24891	900	83281	269	6542	3152
2002	175444	31532	4101	632	9206	2446	25355	888	90058	250	6725	3410
2003	183103	32390	4266	617	9551	2367	25033	903	95747	236	7055	3557
2004	192611	33360	4588	598	9868	2299	26079	870	101924	223	7122	3704
% difference over previous year	5.19	2.99	7.55	-3.08	3.32	-2.87	4.18	-3.65	6.45	-5.51	0.95	4.13

Table 4 Pharmaceutical Affairs

Year	No. of Pharmaceutical Firms	Pharmacies	Medicine Dealers					Pharmacentical Manufacturers			GMP Factories	Western Medicines	Western-Chinese Medicines	Chinese Medicines
			Owned and Operated by Pharmacists	Owned and Operated by Assistant Pharmacists	Western Medicines	Chinese Medicines	Medical Devices	Western Medicines	Chinese Medicines	Medical Devices				
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1993	32101	229	153	76	13373	8866	8983	249	256	145	229	181	31	17
1994	33585	1956	894	1062	11693	9321	9955	251	252	157	227	179	31	17
1995	34846	4862	2386	2476	9074	9631	10609	253	249	168	225	177	31	17
1996	37176	6438	3243	3195	7563	9585	12948	242	238	162	232	→→ 207 ←←		25
1997	38583	6707	3443	3264	7020	9123	15098	243	218	174	228	161	39	28
1998	39027	6434	3436	2998	6466	9217	16262	243	217	188	231	162	39	30
1999	40322	6349	3422	2927	6457	9229	17627	244	208	208	236	165	38	33
2000	43641	6397	3491	2906	6359	11161	19016	243	207	258	233	162	36	35
2001	47130	6440	3600	2840	6524	12864	20560	257	202	283	233	159	35	39
2002	49752	6990	3983	3007	6526	13202	22268	244	200	322	232	156	32	44
2003	51447	7155	4193	2962	6751	12799	23950	243	171	378	232	157	29	46
2004	52685	7435	4465	2970	6759	12712	24924	244	171	440	214	135	32	52
% difference over previous year	2.41	2.36	6.49	0.27	0.12	-0.68	4.07	0.41	0.00	16.40	-7.76	-14.01	10.34	13.04

Note : 1. Data for Kinmen Country and Lienchiang County are included since 1994.
2. *No. of Pharmacies includes 1,921 pharmacies also dealing with prescription and sale of Chinese medicines.
3. Before 1993, the number of pharmaceutical firms includes western medicine dealers and stores selling over-the-counter drugs.

Source : Office of Statistics, Department of Health.

Table 5 Food Sanitation

Year	Laboratory Testing for Food Sanitation	Disqualified	Inspections for Food Sanitation Establishments	To be Improved		Fined		Suspended		Incidents of Food Poisoning	No. of Cases	No. of Deaths
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1993	45424	10.75	273617	27293	9.97	915	0.33	1	0.00	77	2150	1
1994	44205	7.90	257508	20335	7.90	1177	0.46	1	0.00	102	4276	-
1995	40410	10.51	237189	20390	8.60	1316	0.55	6	0.00	123	4950	-
1996	38475	10.11	210942	22229	10.54	2903	1.38	95	0.05	178	4043	-
1997	38606	10.49	197042	16582	8.42	1051	0.53	29	0.15	234	7235	1
1998	38141	8.72	179485	16821	9.37	1035	0.58	34	0.02	180	3951	-
1999	37773	8.09	181818	19020	10.46	37	0.02	10	0.01	150	3112	1
2000	67020	4.42	181865	20363	11.20	152	0.08	8	0.00	208	3759	3
2001	34907	8.56	166195	20069	12.08	104	0.06	59	0.04	178	2955	2
2002	33971	8.57	158583	15978	10.08	69	0.04	9	0.01	262	5566	1
2003	36220	10.06	177102	15525	8.76	104	0.05	8	0.00	251	5283	-
2004	37158	6.89	150698	13426	8.90	118	0.07	10	0.00	274	3992	2
% difference over previous year	2.59	-3.17	-14.91	-13.52	6.14	13.46	0.02	25.00	0.00	9.16	-24.44	0.00

Source : Office of Statistics, Department of Health

Table 6 Control of Communicable Diseases

Year	Cholera		Poliomyelitis		SARS		Measles		Congenital Rubella Syndrome		Typhoid		Paratyphoid		Malaria	
	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed
1993	-	-	-	-	…	…	71	2	1111			→→42←←		36	36	
1994	2	2	-	-	…	…	98	33	--			→→48←←		35	35	
1995	3	3	-	-	…	…	42	-	--			→→47←←		38	38	
1996	-	-	-	-	…	…	47	-	--			→→68←←		38	38	
1997	1	1	-	-	…	…	67	5	--			→→54←←		48	48	
1998	-	-	-	-	…	…	50	9	--			→→74←←		49	49	
1999	5	5	-	-	…	…	23	-	-	-	183	49	14	11	32	32
2000	8	8	-	-	…	…	48	5	-	-	147	43	37	3	42	42
2001	-	-	-	-	…	…	50	9	3	3	172	59	47	11	29	29
2002	2	2	-	-	…	…	79	24	-	-	135	54	64	18	28	28
2003	1	1	-	-	347	347	59	6	-	-	107	40	59	15	34	34
2004	1	1	-	-	…	…	36	-	-	…	93	38	72	19	18	18
% difference over previous year	-0.00	-0.00	-	-	-	-	-39.98	-	-	-	-13.08	-5.00	22.03	26.67	-47.06	-47.06

Note : 1. Before 1991, pulmonary tuberculosis includes open pulmonary tuberculosis only; since 1992, other forms of tuberculosis are included.

2. Berore 1998, typhoid and paratyphoid are classified under one; they are all confirmed cases.

Source: Center for Disease Control, Department of Health.

Table 6 Control of Communicable Diseases (Continued)

Year	Dengue Fever		Dengue Hemerrhagic Fever		Japanese Encephalitis		Dysentery		Rubella		Pulmonary Tuberculosis		HIV Infections		AIDS	
	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed	Reported	Confirmed		Alens		Alens
1993	165	13	…	…	180	11	588	588	1,409	60	…	…	146	146	36	36
1994	1,034	244	…	…	214	13	220	220	195	6	…	…	213	213	65	65
1995	1,803	364	5	5	284	27	573	573	122	2	…	…	264	264	100	100
1996	1,078	53	3	3	332	21	263	263	152	3	…	…	311	311	162	162
1997	772	76	1	1	342	6	426	426	112	4	…	…	383	383	135	135
1998	1,353	334	14	14	417	22	446	446	64	5	…	…	444	444	155	155
1999	1,109	65	4	4	412	24	394	265	31	2	14,730	12,344	507	507	180	180
2000	857	140	1	1	387	13	791	644	93	29	18,699	15,767	570	570	181	181
2001	1,121	270	11	11	400	33	2,021	1,632	84	17	18,889	14,486	689	689	165	165
2002	15,221	5,388	242	242	311	19	1,007	726	78	4	25,262	16,758	773	773	177	177
2003	1,583	145	2	2	309	25	646	367	53	2	22,362	14,074	857	857	225	225
2004	1,421	427	7	7	319	32	465	252	48	4	24,161	17,142	1,521	1,521	257	257
% difference over previous year	-10.23	194.48	250.00	250.00	3.24	28.00	-28.02	-31.34	-9.43	100.00	8.04	21.80	77.48	77.48	14.22	14.22

Source: Center for Disease Control, Department of Health.

Table 7 Health Promotion and Protection

Year	Use of Child Preventive Healthcare	Use of Adult Prventive Healthcare		Screening for Cervical Cancer	General Fertility of Reproductive Women	Fertility of Women under 20	No. of Births
		40-64	65 and above				
	%	%	%	%	0/00	0/00	births
1993	-	-	-	-	57	17.0	325613
1994	-	-	-	-	55	17.0	322938
1995	-	-	-	-	55	17.0	329581
1996	-	-	-	-	54	17.0	325545
1997	-	-	-	-	53	15.4	326002
1998	-	-	-	-	43	13.8	271450
1999	55.75	11.17	30.64	31.04	45	12.9	283661
2000	65.67	12.01	33.56	34.72	48	14.0	305312
2001	74.16	13.40	37.59	32.73	41	13.0	260354
2002	77.88	13.81	41.22	31.91	39	13.0	247530
2003	78.38	13.79	40.32	27.19	36	11.0	227070
2004	91.17	13.99	38.21	29.02	34	10.0	216419
% difference over previous year	12.79	0.02	-2.11	1.83	-2	-1.0	-4.69

Source: Center for Disease Control, Department of Health.

Table 8 Health and Social Insurance

Year	No. of Persons Under Social Insurance		No. of Outpatient Visits per 100 Insured Persons			No. of Inpatients per 100 Insured persons			Average Costs Per Outpatient Visit			Average Costs per Inpatient Care			Average Days of Hospital Stay		
		as % of Total Population	Government Employee's Insurance	Laborer's Insurance	Farmer's Insurance	Government Employee's Insurance	Laborer's Insurance	Farmer's Insurance	Government Employee's Insurance	Laborer's Insurance	Farmer's Insurance	Government Employee's Insurance	Laborer's Insurance	Farmer's Insurance	Government Employee's Insurance	Laborer's Insurance	Farmer's Insurance
	1000 Persons	%	National Health Insurance			National Health Insurance			National Health Insurance			National Health Insurance			National Health Insurance		
1993	11756	55.99	1300.29	1340.01	2106.49	13.30	9.41	20.49	514	375	349	31915	24983	27062	9.28	10.47	11.58
1994	12172	57.48	1492.17	1468.63	2511.16	13.50	9.77	21.12	524	412	397	34377	26170	28613	9.59	10.44	11.64
*1995	19124	89.54		1056.23			10.15			529			29458			9.26	
1996	20040	93.10		1360.89			11.72			549			31901			9.04	
1997	20492	94.25		1432.88			11.60			557			32768			9.21	
1998	20757	94.66		1499.66			11.83			588			34851			8.78	
1999	21090	96.06		1527.85			12.28			614			36098			8.68	
2000	21401	96.16		1472.20			12.57			631			36478			8.73	
2001	21654	96.64		1449.86			13.00			659			37169			8.83	
2002	21869	97.67		1451.80			13.47			707			39160			9.04	
2003	21984	97.26		1437.74			12.48			746			43343			9.64	
2004	22134	97.55		1549.52			13.60			776			46914			9.70	
% difference over previous year	0.68	0.29		7.77			8.97			4.02			8.24			0.62	

Note : Data are for the National Health Insurance since 1995.
Sources : Central Trust Bureau of Labor Affairs, Bureau of National Health Insurance.

Table 9 Causes of Death

Year	ICD No. Mortality List		08-14			29			E47~E53			250, 251, 27, 28*			181		
	All Causes		Malignant Neoplasms			Cerebrovascular Diseases			Accidents and Adverse Effects			Heart Diseases			Diabetes Mellitus		
	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000
1993	109269	524.12	1	22319	107.05	2	13680	65.62	3	13270	63.65	4	12506	59.99	5	5367	25.74
1994	112238	532.27	1	23318	110.58	2	13658	64.77	3	13219	62.69	4	12005	56.93	5	6094	28.90
1995	117954	554.62	1	25841	121.50	2	14132	66.45	3	12983	61.05	4	11256	52.93	5	7225	33.97
1996	120605	562.49	1	27961	130.41	2	13944	65.03	3	12422	57.93	4	11273	52.58	5	7525	35.10
1997	119385	551.84	1	29011	134.10	2	12885	59.56	3	11297	52.22	4	10754	49.71	5	7500	34.67
1998	121946	558.47	1	29260	134.00	2	12705	58.18	4	10973	50.25	3	11030	50.51	5	7532	34.49
1999	124991	567.87	1	29784	135.32	3	12631	57.39	2	12960	58.88	4	11299	51.33	5	9023	40.99
2000	124481	561.12	1	31554	142.23	2	13332	60.10	4	10515	47.40	3	10552	47.56	5	9450	42.60
2001	126667	566.97	1	32993	147.68	2	13141	58.82	4	9513	42.58	3	11003	49.25	5	9113	40.79
2002	126936	565.08	1	34342	152.88	2	12009	53.46	5	8489	37.79	3	11441	50.93	4	8818	39.26
2003	129878	575.63	1	35201	156.01	2	12404	54.98	5	8191	36.30	3	11785	52.23	4	10013	44.38
2004	133679	590.28	1	36357	160.54	3	12339	54.48	5	8453	37.33	2	12861	56.79	4	9191	40.58
% difference over previous year	2.93	14.65		3.28	4.53		-0.52	-0.50		3.20	1.03		9.13	4.56		-8.21	-3.80

Note : 1. Infant Mortality Rate=(No. of deaths of registered infants in a year/total number of births for the year) × 1,000
2. Maternal Mortality Rate=(No. of deaths of pregnant women due to birth deliveries in a year/total number of births for the year) × 100,000
3. 28* includes all diseases under codes 420-429 of the ICD No. Detailed List.

Source : office of Statistics, Department of Health

Table 9 Causes of Death (Continued)

Year	347			321			350			26			E54			Infant Mortality Rate	Maternal Mortality Rate
	Chronic Liver Diseases and Cirrhosis			Pneumonia			Nephritis, Nephrotic Syndrome and Nephrosis			Hypertensive Diseases			Suicide and Self Inflicted Injury				
	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	Order	No. of Deaths	Mortality per 100,000	0/00	0/0000
1993	6	3755	18.01	8	2815	13.50	7	2859	13.71	9	2285	10.96	13	1301	6.24	4.80	8.92
1994	6	4163	19.74	8	2890	13.71	7	3211	15.23	9	2191	10.39	13	1451	6.88	5.07	8.05
1995	6	4456	20.95	8	3070	14.44	7	3519	16.55	9	2616	12.30	11	1618	7.61	6.43	7.59
1996	6	4610	21.50	8	3200	14.92	7	3547	16.54	9	2656	12.39	11	1847	8.61	6.66	7.68
1997	6	4767	22.03	7	3619	16.73	8	3504	16.20	9	2611	12.07	10	2172	10.04	6.35	9.20
1998	6	4940	22.62	7	4447	20.37	8	3435	15.73	9	2273	10.41	10	2177	9.97	6.57	8.84
1999	6	5180	23.53	7	4006	18.20	8	3474	15.78	10	1856	8.43	9	2281	10.36	6.07	8.46
2000	6	5174	23.32	8	3302	14.88	7	3872	17.45	11	1602	7.22	9	2471	11.14	5.86	7.86
2001	6	5239	23.45	8	3746	16.77	7	4056	18.15	10	1766	7.90	9	2781	12.45	5.99	6.91
2002	6	4795	21.35	7	4530	20.17	8	4168	18.55	10	1947	8.67	9	3053	13.59	5.35	7.68
2003	6	5185	22.98	7	5099	22.60	8	4306	19.08	10	1844	8.17	9	3195	14.16	4.87	6.61
2004	7	5351	23.63	6	5536	24.44	8	4680	20.67	10	1806	7.97	9	3468	15.31	5.30	5.54
% difference over previous year		3.20	6.65		8.57	1.84		8.69	1.59		-2.06	-0.20		8.54	1.15	0.43	-1.07

Source : office of Statistics, Department of Health

Table 10 International Comparison

Year	Life Expectancy												Crude Birth Rate					
	ROC		Japan		USA		Germany		UK		South Korea		ROC	Japan	USA	Germany	Uk	South Korea
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	0/00	0/00	0/00	0/00	0/00	0/00
	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year						
1993	71.6	77.5	76.3	82.5	72.2	78.8	72.7	79.2	73.7	79.1	68	75	15.6	9.6	15.5	10	13.1	16
1994	71.8	77.8	76.6	83.0	72.4	79.0	73.1	79.6	73.9	79.2	67	75	15.3	10.0	15.2	9.5	13.0	16.3
1995	71.9	77.7	76.4	82.9	72.5	78.9	73.3	79.7	74.0	79.2	70	77	15.5	9.6	14.8	9.4	12.6	16.0
1996	71.9	77.8	77.0	83.6	73.1	79.1	73.6	79.9	74.3	79.5	68	76	15.2	9.7	14.7	9.7	12.6	15.3
1997	71.9	77.8	77.2	83.8	73.6	79.4	74.0	80.3	74.6	79.6	69	77	15.1	9.5	14.5	9.9	12.5	14.8
1998	72.2	78.0	77.2	84.0	73.8	79.5	74.5	80.6	74.8	79.8	70	77	12.4	9.6	14.6	9.7	12.3	13.8
1999	72.5	78.1	77.1	84.0	73.9	79.4	74.7	80.7	75.0	79.8	72	79	12.9	9.4	14.5	9.4	11.9	13.2
2000	72.7	78.4	77.7	84.6	74.1	79.5	74.0	81.0	75.5	80.2	72	79	13.8	9.5	14.4	9.3	11.5	13.4
2001	72.9	78.8	78.9	84.9	74.4	79.8	75.6	81.3	75.7	80.4	73	80	11.7	9.3	14.1	8.9	11.3	11.6
2002	73.2	78.9	78.3	85.2	74.5	79.9	75.6	81.6	75.8	80.5	72	79	11.0	9.2	14.2	9.0	11.3	10.3
2003	73.4	79.3	77.6	84.4	74.4	80.1	75.5	81.4	75.7	80.7	72	79	10.2	8.9	14.1	8.6	11.7	10.2
2004	(f)73.6	(f)79.4	…	…	…	…	…	…	…	…	…	…	9.6	…	…	…	…	…
% difference over previous year	0.02	0.10	…	…	…	…	…	…	…	…	…	…	-0.5	…	…	…	…	…

Source : World Population, Council of Economic Planning and Development

Table 10 International Comparison (Continued)

Year	Infant Mortality Rate						No. of Physicians per 10,000						No. of Hospital Beds per 10,000					
	ROC	Japan	USA	Germany	UK	South Korea	ROC	Japan	USA	Germany	UK	South Korea	ROC	Japan	USA	Germany	UK	South Korea
	0/00	0/00	0/00	0/00	0/00	0/00	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
1993	4.8	4.3	8.4	5.8	6.3	9.9	11	17	25	29	17	10	48	162	45	97	51	37
1994	5.1	4.2	8.0	5.6	6.2	8.9	12	18	26	30	17	11	49	162	43	97	49	41
1995	6.4	4.3	7.6	5.3	6.2	8.5	11	18	26	31	18	11	53	162	41	97	47	44
1996	6.7	3.8	7.3	5.0	6.1	8.3	12	18	26	31	18	12	53	162	40	96	45	46
1997	6.4	3.7	7.2	4.9	5.9	8.0	12	19	27	31	19	12	56	164	40	94	44	48
1998	6.6	3.6	7.2	4.6	5.7	7.9	12	19	27	32	19	13	57	164	38	93	43	52
1999	6.1	3.4	7.1	4.5	5.8	7.8	13	19	28	32	20	13	56	164	36	92	41	55
2000	5.7	3.2	6.9	4.4	5.6	7.7	13	19	28	33	20	13	57	165	36	91	41	61
2001	6.0	3.1	6.9	4.3	5.5	7.6	14	21	28	33	…	14	57	…	…	…	…	…
2002	5.4	3.0	6.9	4.2	5.2	9.6	14	…	…	…	…	…	59	…	…	…	…	…
2003	4.9	3.0	6.7	4.2	5.3	…	14	…	…	…	…	…	60	…	…	…	…	…
2004	5.3	…	…	…	…	…	15	…	…	…	…	…	63	…	…	…	…	…
% differenc over previous year	-0.5	…	…	…	…	…	0.8	…	…	…	…	…	3.0	…	…	…	…	…

Source : World Population, Council of Economic Planning and Development
Source : OECD

Table 10 International Comparison (Continued)

Year	Occupancy						Average days of Hospital Stay					
	ROC	Japan	USA	Germany	UK	South Korea	ROC	Japan	USA	Germany	UK	South Korea
	No.	No.	No.	No.	No.	No.	Beds	Beds	Beds	Beds	Beds	Beds
1993	72.8	82.5	64.4	82.4	…	76.8	10.5	46.4	8.6	15.0	10.2	13.0
1994	73.1	83.1	62.9	81.8	…	77.0	10.2	45.5	8.2	14.7	10.0	13.0
1995	68.6	83.6	62.8	81.3	79.0	66.3	10.2	44.2	7.8	14.2	9.9	13.0
1996	66.0	84.3	61.5	79.8	80.0	70.1	9.4	43.7	7.5	13.5	9.8	13.0
1997	63.1	83.9	61.9	80.4	80.0	69.7	9.2	42.5	7.3	12.5	…	13.0
1998	60.8	84.0	62.6	81.6	81.0	66.9	8.7	40.8	7.1	12.3	…	13.0
1999	62.8	84.6	63.4	81.4	82.0	66.9	8.5	39.8	7.0	12.0	…	12.0
2000	64.0	…	63.9	81.1	83.0	67.2	8.7	…	6.8	11.9	…	14.0
2001	68.7	…	64.5	80.1	84.0	67.3	8.8	…	6.7	11.6	…	13.0
2002	70.0	…	…	…	…	…	*8.8	…	…	…	…	…
2003	*66.0	…	…	…	…	…	*9.4	…	…	…	…	…
2004	*68.6	…	…	…	…	…	*9.7	…	…	…	…	…
% difference over previous year	2.9	…	…	…	…	…	0.3	…	…	…	…	…

Source : OECD

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